A McGRAW-HILL PUBLICATION

Chemical Week

Productivity pickup: how management and labor are meeting '59's top challenge . . p. 18

Odds favor tax cuts for U.S. investors abroad. Legislation likely this year . . . . . p. 27

How ethical are credit men? Here's where they stand on 13 key practices . . . . . p. 53

Steel mills face July strike. What it means to CPI equipment users . . . . . p. 65

Shortcut to acrylonitrile. Sohio's new process cuts costs by saving steps . . . . . p. 69

February 28, 1959

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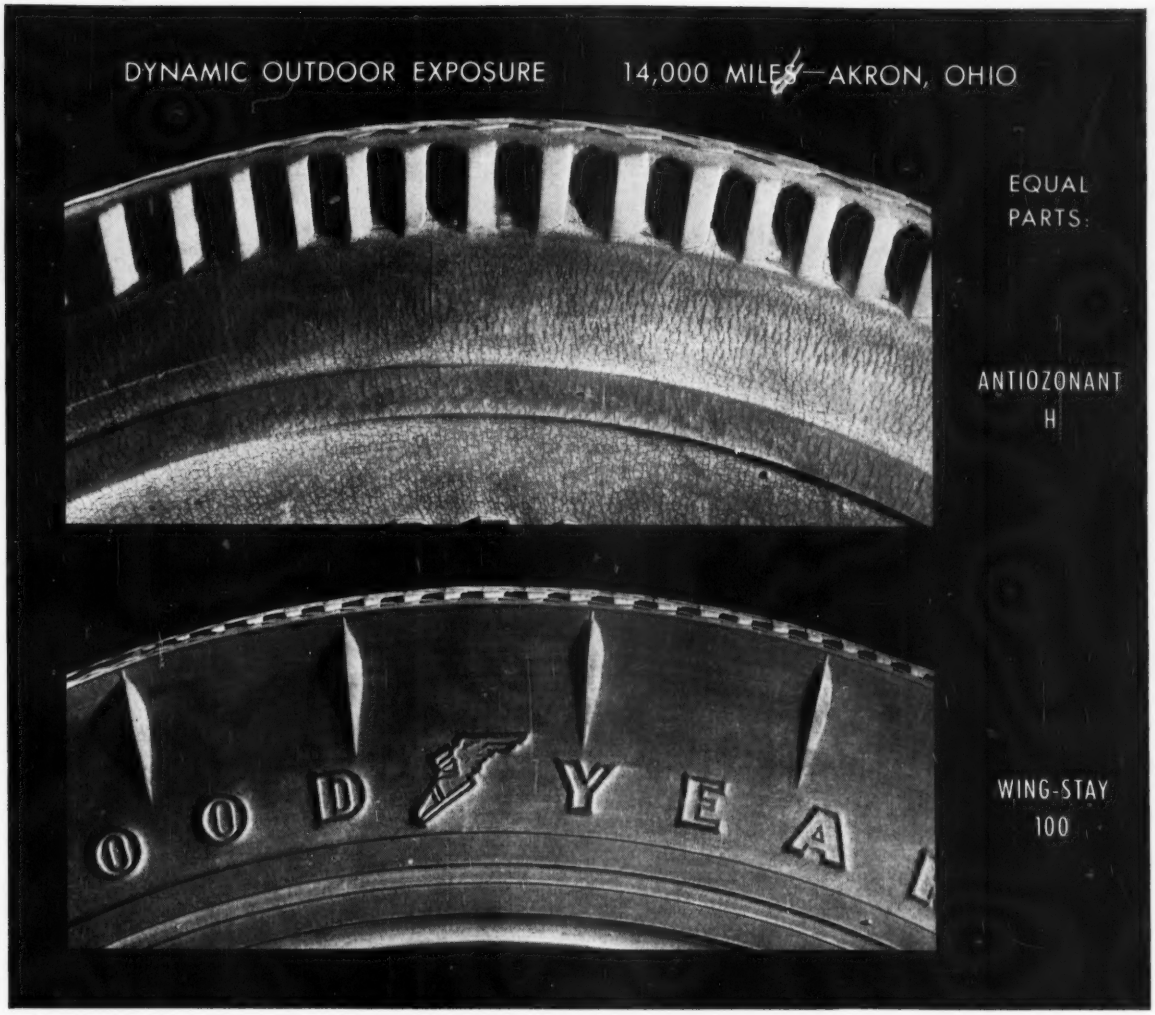

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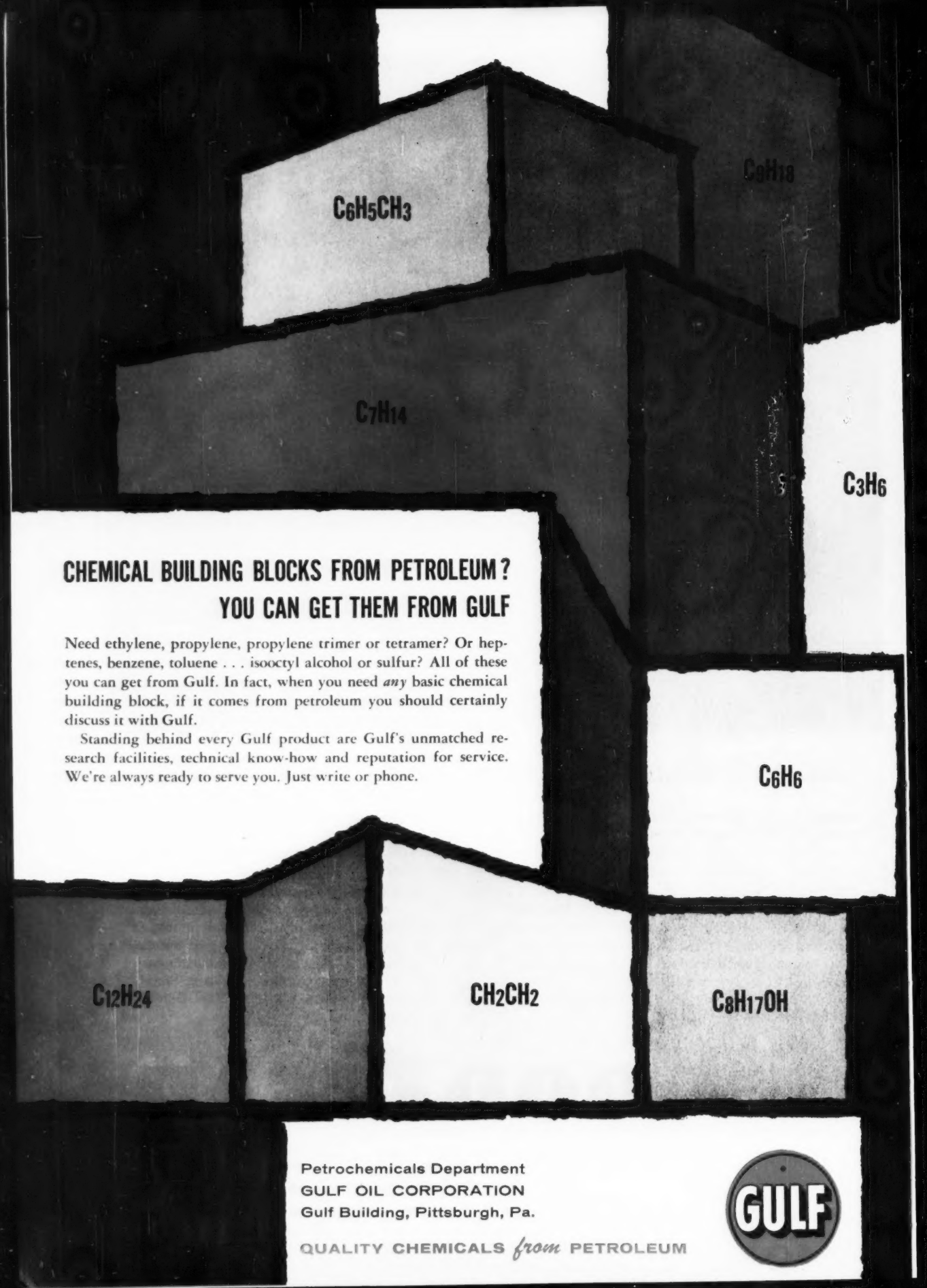

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Chemical Week

TOP OF THE WEEK

FEBRUARY 28, 1959

- **New joint petrochemical ventures:** AviSun (Sun Oil and American Viscose); Solar (Atlas Powder and Ohio Standard). **p. 20**
- **New spur to U.S. investments abroad**—tax-lowering regulations on overseas financing likely to be passed by Congress **p. 27**
- **Warwick Wax turns to Japanese imports.** Forerunner of big role for Japanese in supplying U.S. wax users? ..... **p. 56**
- **Makers of process equipment prepare for steel strike.** Prospect: higher prices, but no shortages ..... **p. 65**

11 VIEWPOINT

Is the SEC a misguided "traffic cop"? Instead of maximizing information available to the public, it now forces companies to minimize their disclosures.

11 OPINION

11 MEETINGS

13 BUSINESS NEWSLETTER

18 Chemical companies' big gains in productivity bring new problems: union discontent; still greater need for cutting operating costs.

20 Two new companies—AviSun (to make polypropylene) and Solar (acrylonitrile, urea) promise new petrochemical competition.

21 Commercial Solvents formulates policies following rift among stockholders and departure of president.

21 Diversification tack for Spencer: uranium oxide production at new plant, using a new Spencer-developed process.

23 WASHINGTON NEWSLETTER

27 ADMINISTRATION

Tax cuts coming for foreign investors? Odds favor it; Congress may pass the legislation this year.

43 RESEARCH

Merit-raise plan for research technicians posts good record at California Research Corp. Tip for your research department?

46 British groups use ion-exchange resins to decontaminate radioactive milk.

49 TECHNOLOGY NEWSLETTER

53 SALES

Thirteen unethical credit practices pegged by chemical credit managers in new survey.

56 SPECIALTIES

Major shipment of paraffin wax from Japan arrives in San Francisco this week. It could presage swelling supplies of Japanese waxes for the U.S. markets.

59 MARKET NEWSLETTER

62 MARKETS

Here's how Paley Report chemical forecasts are holding up.

65 PRODUCTION

Threatening steel strike may boost process equipment prices, but it won't mean shortages.

69 ENGINEERING

Sohio takes a shortcut to acrylonitrile: novel propylene and ammonia process.

72 BUSINESS BENCHMARKS

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Hercules' "Maggie" now on stream...

Badger-Built plant

produces **99+% HNO_3**

without using sulfuric

At its new plant in Parlin, N. J., Hercules Powder Company is now producing better nitric acid concentrate for about 60% of the cost of conventional methods. Secret of Hercules' success: Application of the new company-developed "Maggie" process (that uses magnesium nitrate as a desiccant instead of sulfuric acid); selection of Badger to engineer and construct the first 50 ton/day plant.

Working closely with the Hercules staff, Badger came up with a number of engineering and construction innovations. To cite one example, the main tower was designed to use fractionating trays rather than conventional packing. This recommendation allowed a substantial reduction in the size of the column, savings of 20-30% in its cost.

Several months of operation have proved the soundness of the plant concept. Plant operation surpasses expectations; product is 99+% HNO_3; capital investment is cut 30 to 40%; operating expense has been halved; corrosion is greatly reduced.

Process licenses now available

The "Maggie" process is available for licensing from Hercules for both the United States and abroad. Badger can furnish the following: Complete information on licensing; preliminary cost and utility estimates for your own evaluation; design, engineering, procurement and construction services for your plant.

Write for brochure . . . includes flow diagram, technical and operating details. Badger Manufacturing Company, 230 Bent Street, Cambridge, Massachusetts.

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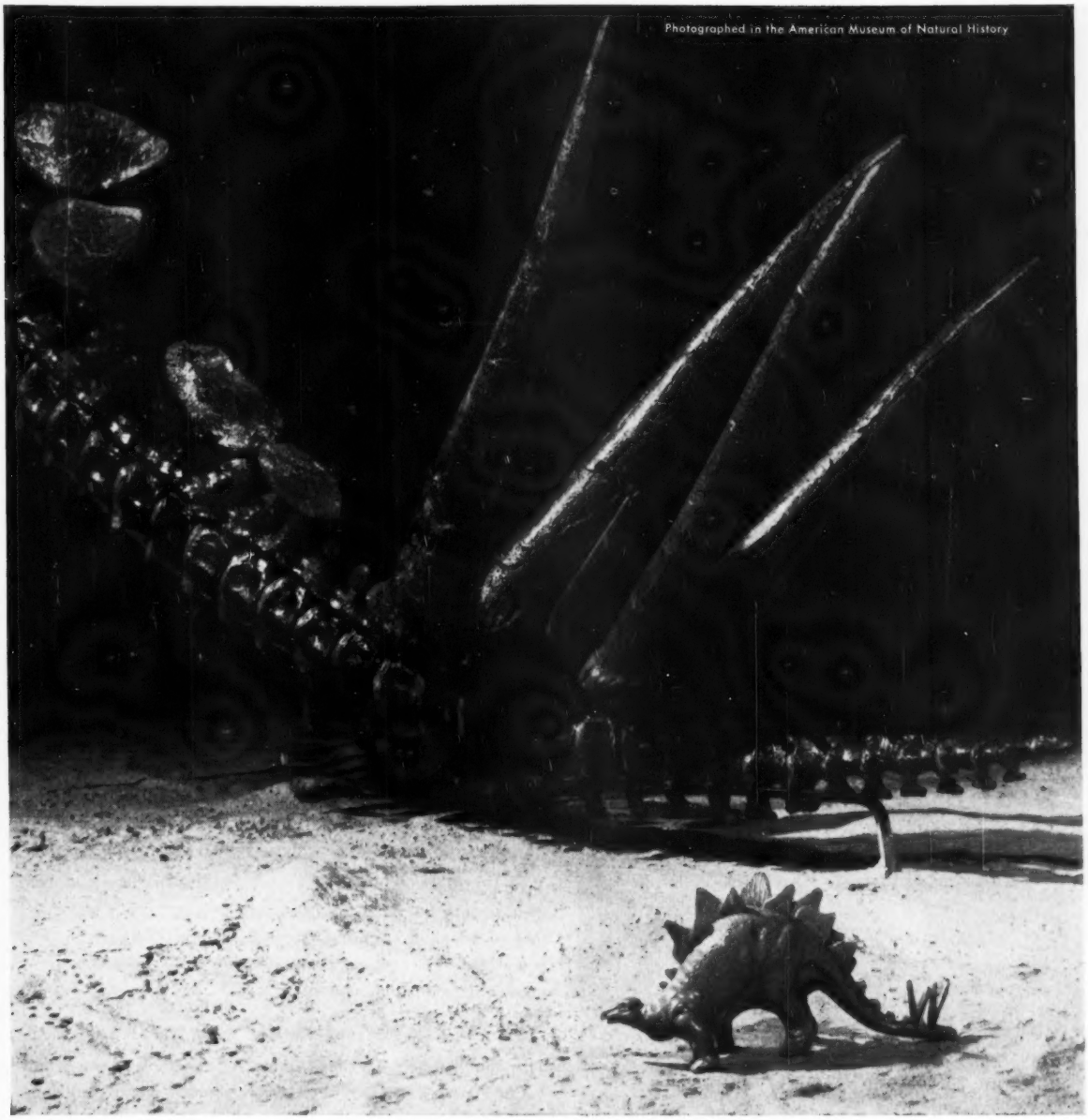

Old "Bony-Back" would be proud of his descendants...

Stegosaurus, the bony-backed Dinosaur who lived a hundred million years ago, had *two* brains – one in his head – the other aft to operate his tremendous posterior. Even so, neither brain held a thought for the future. But Nature did... and from pre-historic life forms like him, created the miracle of petroleum. Now through the wonders of science, Sinclair takes that petroleum, rearranges its molecular structure, and creates petrochemicals for everything from plastic toy Dinosaurs to – whatever you might make. Sinclair's petrochemical experience... raw materials... research and technical knowledge are at your service. Whether your chemical needs are in ton-lots or experimental quantities, call Sinclair today!

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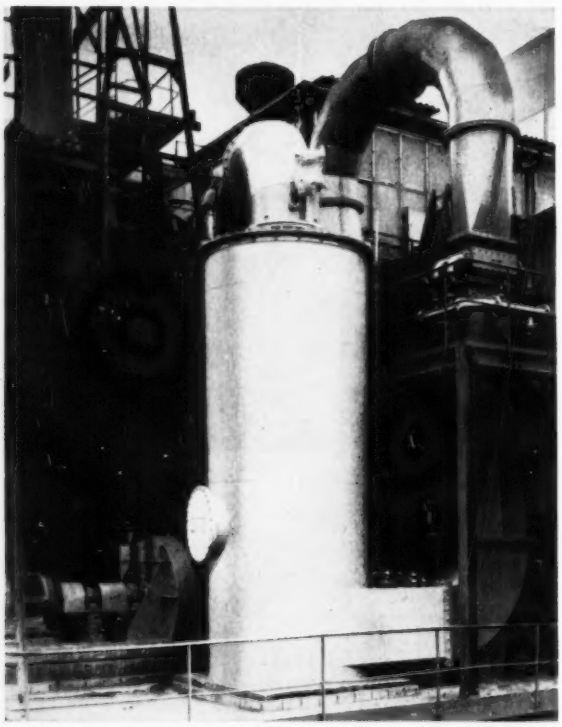
Chemico Gas Scrubbers offer practical solution in variety of CPI applications



The Chemico venturi scrubber installed on this phosphoric acid plant removes and recovers better than 99% of the phosphoric acid mist. In this instance, both venturi and cyclonic separator are rubber-lined to withstand the effects of the acid.

FULL DETAILS AVAILABLE

For your copy of a new brochure giving complete data on Chemico venturi gas scrubbers or for technical assistance on a specific problem, write to the address below.

Dusts, fumes and mists—the unavoidable by-products of many industrial processes—often create tremendous public relations and legal problems. The chemical industry is now taking vigorous steps to remove these nuisances.

One such step has been the application of Chemico venturi gas scrubbers which remove sub-micron as well as plus-micron particles from gas streams, thereby eliminating the polluting elements. These units are based on the Pease-Anthony venturi principle which has been modified and improved by Chemico.

• • •

OUTSTANDING PERFORMANCE ON DIFFICULT PROBLEMS

Typical of the success of Chemico venturi gas scrubbers has been their recent application to sulfuric acid concentrators which have long been a source of air pollution. By the use of this equipment, better than 99% of the acid mist can now be removed, thus solving this difficult pollution problem.

SIMPLE CONSTRUCTION PERMITS WIDE APPLICATION

The simple design of Chemico venturi gas scrubbers allows for use of materials resistant to corrosion, abrasion or high temperature. This, plus their small space requirements, permits installation in existing plants handling corrosive materials as well as incorporation into new plant designs. In addition, no critical controls are required and maintenance costs are reduced to the barest minimum. Chemico venturi scrubbers have been proven for use in acid concentrators, copperas roasting kilns, chlorosulfonic acid plants, dry ice plants, phosphoric acid plants and many other chemical manufacturing operations. These are the same scrubbers which won such wide acceptance in the iron and steel industries.

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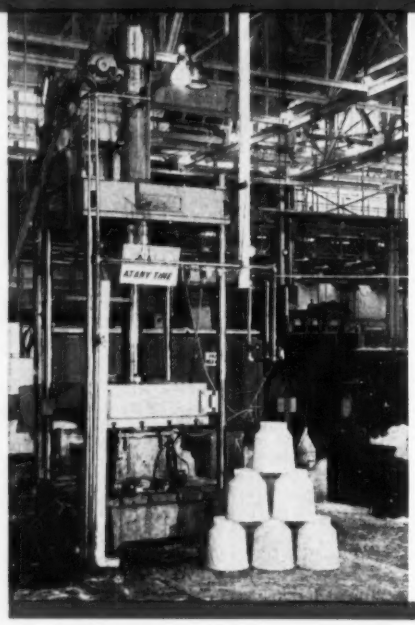

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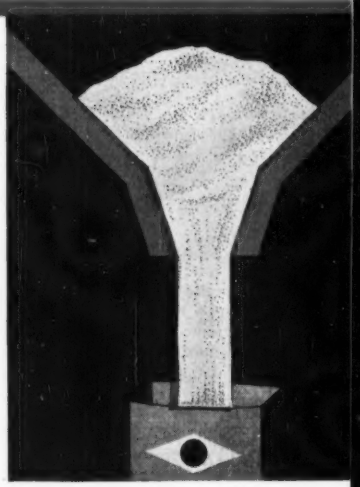

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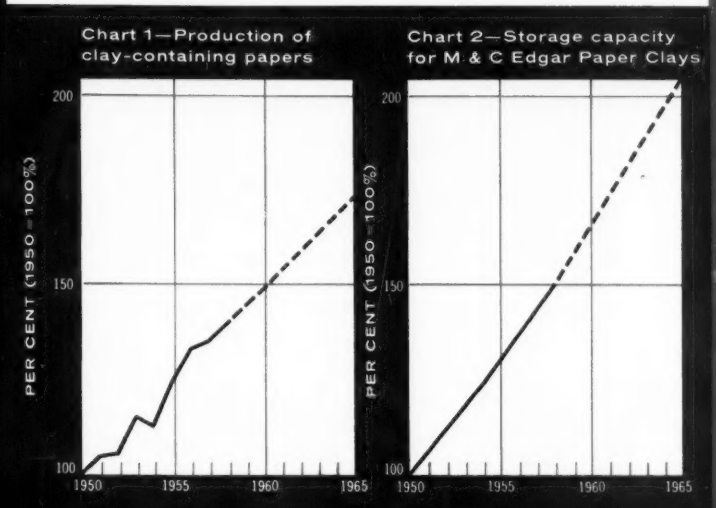

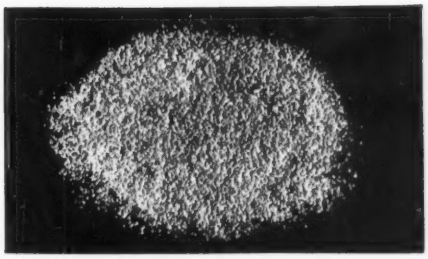

Granular Herbicides do lasting weed-killing jobs . . . replace mowing and cultivation

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M & C's Granular Attaclay is the most widely used carrier material for these herbicides. The photo shows Attaclay 30/60 mesh (at quarter size). Attaclay's available in several size distributions to suit its jobs . . . look into it . . . use the coupon.

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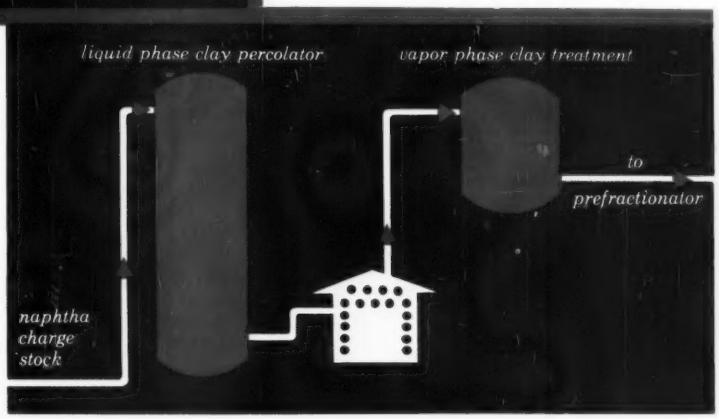
Flow diagram shows reformer feed stock passing through Attapulgus Clay-packed "guard case" equipment where troublemaking constituents are removed by selective adsorption and catalysis. Some poisons need only be present at 10 *parts per billion* to permanently foul the catalysts. Low investment and prompt payout in terms of optimum production rate characterize this protective treating operation . . . poisons removed include Arsenic, Nitrogen, Tetraethyl Lead and Alkyl Sulfur compounds.



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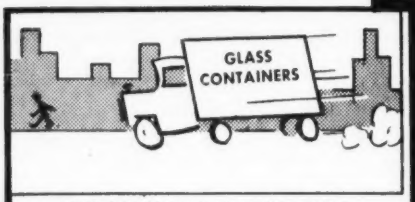

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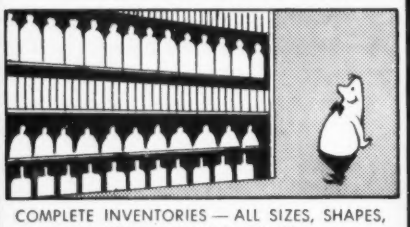
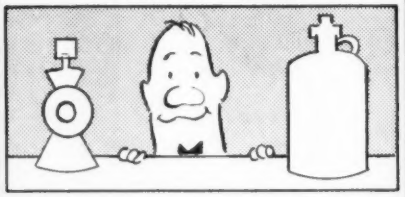
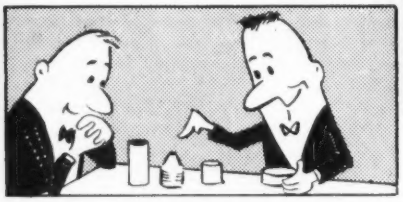


COMPLETE INVENTORIES — ALL SIZES, SHAPES, COLORS AND CLOSURES

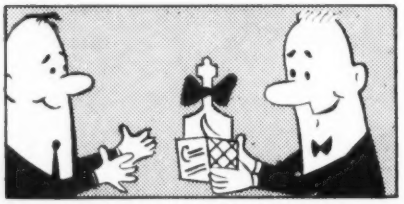


CUSTOM OR STANDARD GLASS CONTAINERS FROM MANY SOURCES

CUSTOM DESIGNED LABELS PRINTED DIRECTLY ON YOUR GLASS CONTAINER



FREE ADVICE ON PACKAGING PROBLEMS



A COMPLETE PACKAGING SERVICE

NATIONAL ASSOCIATION OF GLASS CONTAINER DISTRIBUTORS

Sheldon Berman, Secretary, 841 Cermak Road, Chicago 8, Illinois

OPINION

PVAc Price Cuts

TO THE EDITOR: The article about Du Pont's recent price reductions on Elvacet polyvinyl acetate emulsions (*CW Market Newsletter, Jan. 3*) contains a quote attributed to Du Pont that said, in effect, that cost of ingredients was only part of the picture influencing the amount of reduction. It says that more important was the fact that Du Pont was seeking additional sales.

This quotation is out of context of what we said about our reason for the price reduction. Furthermore, this does not reflect our attitude on this subject. We reduced the prices of polyvinyl acetate emulsion at this time to meet the generally lower prices of similar competitive products. . . .

D. O. NOTMAN
General Manager
Electrochemicals Dept.
E. I. du Pont de Nemours & Co., Inc.
Wilmington, Del.

CW's *item reported Du Pont's 2¢/lb. reduction in prices for both PVAc homopolymers and copolymers, and a resultant 2¢/lb. cut in homopolymer and 1½¢ cut in copolymer prices by other producers.*—ED.

Import 'Liabilities'

TO THE EDITOR: I read your report on "Purchasing Men Spot '59 Buying Shifts" (*CW, Jan. 31, p. 65*) with considerable interest—particularly its references to the purchase of imported chemicals. However, I was somewhat troubled by the list of five "chief problems" that were indicated as inherent liabilities in purchasing such imports.

More and more, it has become the practice of the most substantial and reputable foreign producers to sell their chemicals in the U.S. through authorized, exclusive sales representatives. Our own company acts in this capacity, as well as at least a dozen others that come to mind offhand.

The prime function of a firm like ours is to place chemicals of foreign production into warehouse stock at strategic shipping points throughout the country, after having arranged for customs clearance and currency matters ourselves. We can then offer to U.S. buyers in the normal way; i.e., in U.S. currency (cents per pound) f.o.b. New York, Chicago, Los Angeles, or other stock points. The problem of delay in crossing oceans is also absorbed by the sales representative, since he arranges to keep sufficient stock on hand at all times. Needless to say, he also improves over-all efficiency of the operation by combining the orders of several consumers into one larger order to be placed with the factory, thereby enabling him to obtain merchandise at prices prevailing for larger bulk quantities. Indeed, more and more buyers are looking to foreign shores as a means of saving money; but the difficulties frequently cited obtain only in some instances, since a substantial volume of imported chemicals sold in this country are available for immediate shipment from local warehouse stocks.

A. J. FRANKEL
General Manager
Aceto Chemical Co., Inc.
Flushing, N.Y.

The article points out that "delivery dependability has improved in recent years." It is well known that larger importers—such as Aceto, Baird, Fallek—maintain such stocks. But the problems we list do exist in buyers' minds. Whether they are more fancied than real is another matter. —ED.

MEETINGS

Commercial Chemical Development Assn., annual New York meeting; theme: diversification in the chemical industry; Statler Hotel, New York, March 4-5.

International Acetylene Assn., annual convention, Roosevelt Hotel, New Orleans, March 9-10.

Assn. of Consulting Chemists and Chemical Engineers, panel of six experts in open discussion; subject: Selling Professional Services; Shelburne Hotel, New York, March 10.

American Institute of Chemical Engineers and **American Chemical Society,** sixth annual joint technical meeting, King Edward Hotel, Beaumont, Tex., March 13.

Assn. of Corrosion Engineers, 1959 Corrosion Show and 15th annual national conference, Sherman Hotel, Chicago, March 16-20.

Fifth Nuclear Congress, Public Auditorium, Cleveland, April 5-10.

VIEWPOINT

"CAN'T TALK TO YOU about *anything* today. Why, the SEC would hop on our tail so fast. It's those new securities that we'll be registering, you know. Talk to me next week." Those were the recent words of the president of an important process industry firm to a CHEMICAL WEEK reporter.

"I'm sorry," said an official of a large chemical company, "I'll have to withdraw my invitation for you to sit in on our big meeting with the investment people. Our lawyers say that if you attend, we'd be risking SEC disapproval of our bond issue."

Not all companies are facing a situation in which they feel they must withhold information. But because of current Securities & Exchange Commission action, there are sure to be others.

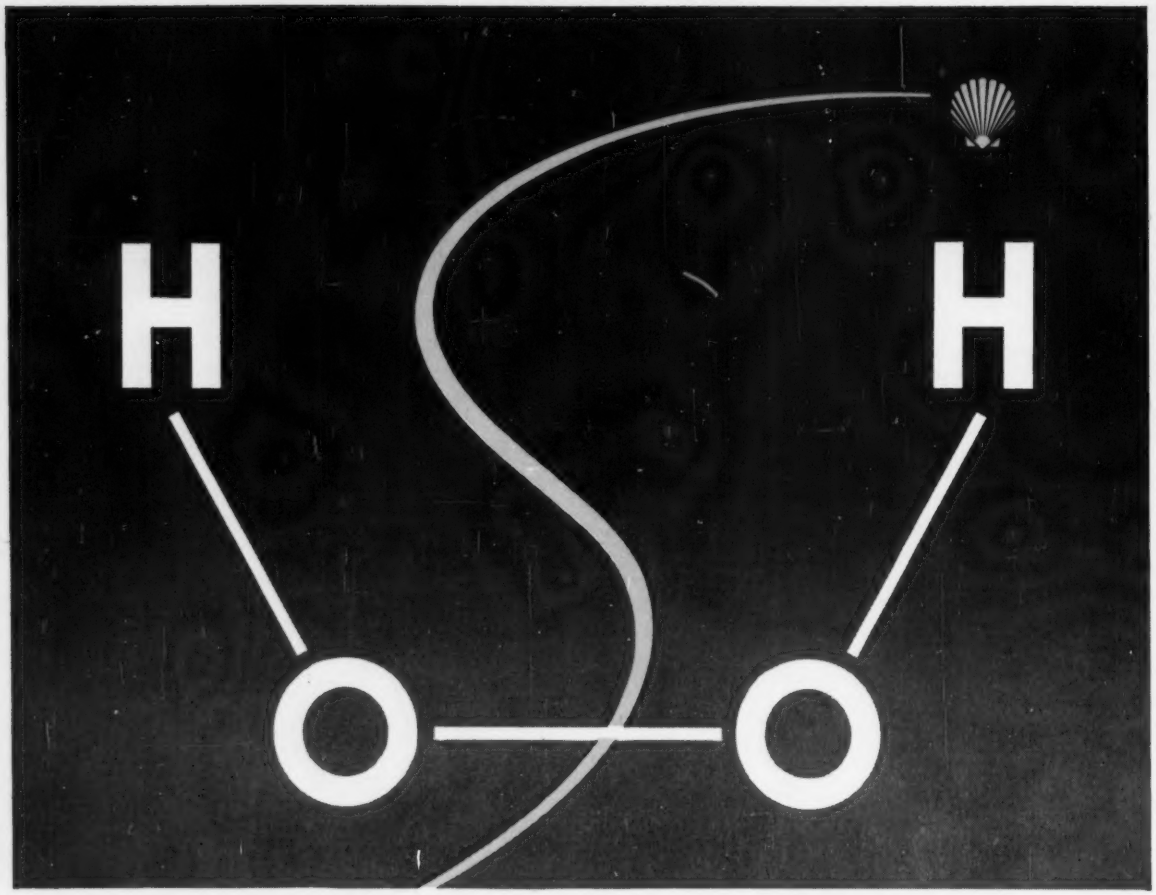
SEC should make certain that the public receives the same information that company "insiders" receive, but it should not, of course, become a misguided traffic cop. Instead of maximizing information available to the public, the practical effect of SEC rulings (as distinguished from their legal intent) is to minimize the distribution of news:

(1) SEC rulings have interfered with the normal relationship between the press and its sources on subjects that are only remotely connected with any sales of securities.

(2) SEC forces the press to use sources that have no responsibility for a specific securities issue—someone, for example, with a brokerage house not involved in a specific sale, but which may have been approached at the time the underwriting group was being formed.

We feel that SEC has done a yeoman's job of policing the security markets. But the agency is now taking too negative an approach. SEC Chairman Edward Gadsby, in a speech last year, and the full commission, in its Arvida findings a week ago, indicated what *can't* be said. Now, let's have a statement to tell companies what they *can* say.

H. C. Johnson
Editor-in-Chief

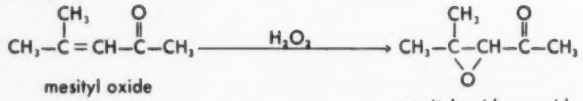


H_2O_2... practical source of oxygen for chemical synthesis

THE LIST of uses for hydrogen peroxide in chemical synthesis is growing steadily. If you manufacture plasticizers, resins, insecticides, or organic intermediates, you will find hydrogen peroxide a ready means for adding oxygen.

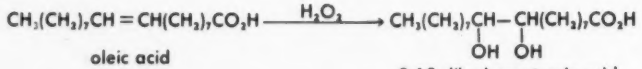
Hydrogen peroxide reacts under a variety of conditions and with a wide range of organic substances. Practical reactions include epoxidation, hydroxylation, peroxidation, and amine oxide formation. Examples are:

Epoxidation



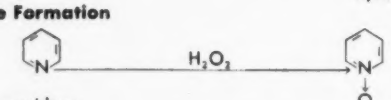
mesityl oxide — mesityl oxide epoxide

Hydroxylation



oleic acid — 9,10-dihydroxystearic acid

N-Oxide Formation



pyridine — pyridine oxide

Shell Chemical's laboratory facilities and field staff are at your disposal to help with problems in using, storing, and handling hydrogen peroxide. Phone or write for more information.

SHELL CHEMICAL CORPORATION
INDUSTRIAL CHEMICALS DIVISION

Atlanta • Chicago • Cleveland • Detroit • Houston • Los Angeles • Newark • New York • San Francisco

SHELL

Business
Newsletter

CHEMICAL WEEK
February 28, 1959

Chicago is the scene of the CPI's biggest legal tussle this week. There, Du Pont lawyers are wrangling with antitrusters over the extent to which the company should be shorn of its full ownership and control of 63 million General Motors shares.

Opening arguments in U.S. district court in Chicago covered whether charges against affiliated holding companies, Christiana Securities and Delaware Realty, should be dismissed. In a surprise move, Du Pont attorneys agreed to wait until the end of proceedings for a ruling.

Next, government lawyers introduced documents on 49 large stock issues of the past in an attempt to show that new and secondary offerings don't necessarily reduce stock values. Du Pont argued that each piece of evidence would have to be supported by witnesses and would make a "hodgepodge" of the record.

Presiding Judge Walter LaBuy sustained Du Pont's objection, had the U.S. call Sumner Emerson, a partner in a brokerage firm, Morgan Stanley & Co., to describe the offerings. Emerson—present in the courtroom as an observer—is slated to testify later in the trial as a "star" witness for the defense.

The broker described similar offerings underwritten by his firm, said the proposed GM sale "would be very unusual if it didn't have a depressing effect" on the stock's price.

•

Du Pont is in the news on the European front, too. Last week, it began forming a Geneva-based sales company, Du Pont de Nemours International, S.A. Initially, it will handle sales of textile fibers and elastomers (Du Pont has a neoprene plant going up in Northern Ireland and will soon build an Orlon plant in the Netherlands.) But the new firm will broaden its activities as new Du Pont plants go up in Europe. It will also channel exports from Du Pont's U.S. plants.

•

U.S. exporters face a new form of competition for world markets. It comes from the six members of the European "Common Market," whose integration plans already spell trouble for U.S. companies now selling to the bloc. These nations now plan to guarantee export financing for the Euromart companies that offer goods in Asia, Africa, North and South America, and conceivably even in the U.S.

U.S. petrochemical equipment makers may have lost some sales last week as a result of the first such multicountry deal. Mexico's state-owned oil and petrochemical concern, Pemex (*CW, Dec. 20, p. 22*), has a $15-million, five-year credit to buy petrochemical equipment—within the Common Market. Pemex can also call on the selling companies for technical aid.

More such deals are on the way. The Pemex deal was a private arrangement by a five-nation bank syndicate (Luxemburg was not represented). But official machinery—similar to the U.S. Export-Import bank—may be set up. Representatives of the members' export-financing agencies will meet in Berne soon to consider pooling their financial resources.

•

Late year-end earnings show selective gains, some weak spots.

Pan American Sulphur upped after-tax net to $3.6 million in '58, compared with '57's $3.5 million. Per-share earnings, however, were the same in both periods, $1.69.

Texas Gulf Sulphur's net dipped to $13.4 million from $17.6 million chalked up in '57. Sales sagged to $57.1 million, vs. $66.9 million the previous year.

Upjohn Co. boosted earnings in the year to $20 million from $17.4 million in '57, posted sales of $128.1 million, up 14.1%.

Metal & Thermit sales dropped to $35.3 million, vs. $42.2 million the previous year. Profits slumped to $910,109, off 38%.

Koppers' profits nose-dived to $6.6 million, compared with $9.4 million in '57. Sales were off 20%, to $260.6 million.

•

Stock-split news buoyed market prices of several chemical stocks.

Pfizer, following a directors' meeting late in the week, decided to up its proposed split from 2½-for-1 to 3-for-1. Immediately, 3½ points were added to the price of Pfizer shares, which closed at a new high of $105/share.

Similar action hit trading in Thiokol shares. After directors approved a 3-for-1 split, the stock closed at 105⅞, up 2 points for the day.

Eastman Kodak also joined the split candidates with a proposed 100% stock distribution, plus a boost in the cash dividend. The shares were heavily traded all week, tacking on substantial day-to-day gains.

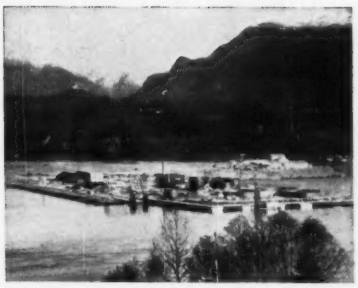
And after Colgate-Palmolive directors last week proposed a 3-for-1 split, along with a 20% dividend increase, the company's shares were at a premium on the New York Stock Exchange, trading at a new '58-'59 high of $100/share.

•

Look for another producer of ammonium perchlorate to enter the market soon. Pacific Engineering and Production Co. of Nevada is busily readying new equipment at Henderson, Nev., to produce the chemical. Though capacity is still under wraps, Pacific President Fred Gibson tells *CW* a "modified electrolytic" process will be used. Current producers are American Potash, also at Henderson; Pennsalt, at Portland, Ore.; and HEF, Inc., at Columbus, Miss.

BRIEFS

on western Canada's first source of chlor-alkali chemicals... some ways to gauge a supplier's services... a new, up-to-date list of Hooker chemicals and services... how to get data on phosphorus-sulfur compounds



Chemicals for a growth area

Pulp, petroleum, and plywood are three of the main reasons why industry is popping in western Canada.

Fitting neatly into this growth picture is the new plant of Hooker Chemicals Ltd., in North Vancouver, B. C. The plant, which opened in October, 1957, is Canada's first chlor-alkali producing point west of the Rockies.

By rail and barge, it supplies caustic soda and chlorine for making and bleaching pulp and more caustic soda to help sweeten petroleum refinery products and to produce plywood adhesives.

Hooker customers around Vancouver now enjoy a freight saving on these chemicals, which formerly came into the area by sea going barge from our Tacoma plant.

Is your supplier growing with you?

In its modest way, this additional Hooker plant underscores a point that you may consider important in your own expansion plans.

You have much to gain by tying up with a chemical supplier geared to the spread of industry into new areas, accustomed to anticipating your requirements of tomorrow, even while serving you dependably today.

Close to the major industrial centers of the East, Midwest, and West Coast, Hooker plants and stock points give you quick, dependable service when you need it. All Hooker caustic soda plants and distributing points are on deep water. This makes transportation extremely flexible. It tends to minimize shipping costs, and permits a choice that can make a big difference if an emergency occurs.

And if you buy l/c/l, there's an authorized Hooker distributor nearby, ready to meet your needs for caustic soda and other Hooker chemicals.

If you'd like to see how this flexible, fast-moving supply team can strengthen your position on chemicals, drop us a line and we'll get the facts to you promptly.

New bulletin lists Hooker products

You'll find a complete up-to-the-minute listing of Hooker chemicals in this new 12-page bulletin.

The new bulletin supersedes General Products List 100 and Bulletin 100-A which you may have now. Indexed for ready reference, it lists the chemicals you can buy from us in commercial quantity, including chemicals sold under the NIALK® and OLDBURY® brand names.

Under each product you'll find a short description and condensed listing of properties, actual and suggested uses, and shipping containers. The bulletin also sums up for you the major types of processing performed at Hooker.

If you'd like to have this up-to-date timesaver in your file or on your desk, just check the coupon for a copy of *Bulletin 100-A*.

Here's data on phosphorus-sulfur compounds

Every time you strike a match, you're helping to justify the market researchers' predictions for one of our OLDBURY Products: red phosphorus.

This fascinating element got off to a commercial start in this country in 1910, on the site of the present OLDBURY Products plant in Niagara Falls.

Today many other items that must burn up before they can do anyone any good are made with OLDBURY *red phosphorus* or *phosphorus sesquisulfide*, P_4S_3. These include matches, fireworks, safety and signal flares, fusees, and smoke screens.

Your product may require another equally useful, though less dramatic, way of putting phosphorus to work:

Phosphorus Pentasulfide, P_4S_{10}. We make it in three particle-size grades of powder, and as a fused solid. Phosphorus content is 27.8% minimum. Powder forms come in lever-pak drums, 150 lbs. net; solid in single-trip steel drums, 215 lbs. net.

These products are available, as always, under the highly reputed OLDBURY label. For more information, we suggest you check the coupon for new technical data sheets just completed.

For more information on chemicals mentioned on this page, check here:

- ☐ Caustic Soda
- ☐ New list of products—Bulletin 100-B
- ☐ Phosphorus, white
- ☐ Phosphorus, red
- ☐ Phosphorus Pentasulfide
- ☐ Phosphorus Sesquisulfide

Clip and mail to us with your name, title, company address. *(When requesting samples, please use business letterhead.)*

HOOKER CHEMICAL CORPORATION

702-2 FORTY-SEVENTH STREET, NIAGARA FALLS, N. Y.

Sales Offices: Chicago Detroit Los Angeles New York Niagara Falls Philadelphia Tacoma Worcester, Mass.

In Canada: Hooker Chemicals Limited, North Vancouver, B. C.

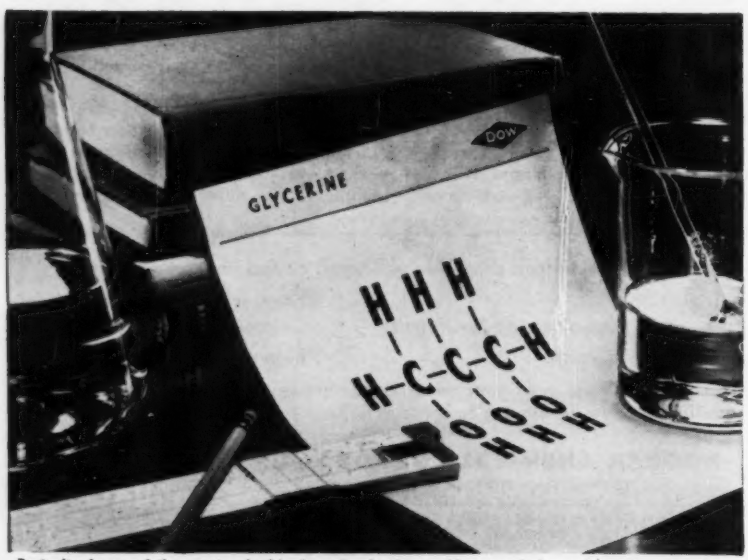
HOOKER CHEMICALS PLASTICS

Polyol portraits:

GLYCERINE

One in a series by "the men that make the most of them"

Dow's productive capacity for producing synthetic glycerine has helped to alleviate the erratic supply of this important commodity. This has stabilized the price of glycerine. Though its commercial history spans more than 175 years, it first stood on its own feet as a product (rather than a by-product of the soap industry) when produced synthetically in 1947. Since then it has had a new extension of usefulness. In addition to stabilizing the supply of an important commodity, synthetic glycerine brought with it the purity made possible by its chemical production. It deserves to sit for the first "portrait" in this series, because it is the prototype product from which stems today's ever-widening family of the polyols.



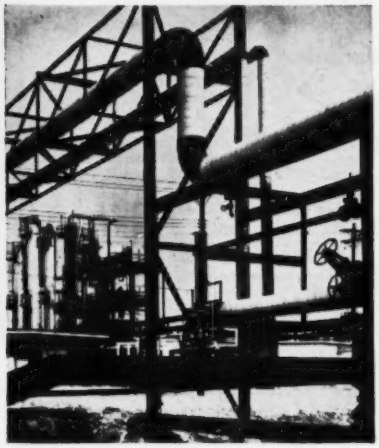
Portrait of one of the most valuable formulas in the working vocabulary of creative chemistry.

The chemical facts, of course, are well known. Glycerine is the simplest trihydric alcohol. Physically it is colorless and odorless; a somewhat viscous liquid. The secret of its versatility: one secondary and two primary hydroxyl groups. Though the primary hydroxyls are more reactive than the secondary, reaction is characteristic of all three groups.

And one or more of the three hydroxyl groups can be replaced by other groups, such as alkyl radicals or halogens. Since a different type of group can be introduced into each of these positions, an unusual number and variety of derivatives can be formed. Typical of many useful types of glycerine reactions possible are: esterification with either organic or inorganic acids, polymerization, etherification, amination, and reaction with alkali metal hydroxides.

Physical talents, too, account for the many millions of pounds of glycerine that go into non-chemical uses. Here it functions as plasticizer, humectant, solvent, bodying agent, and lubricant, in a variety of product roles. Generally no chemical combination

takes place in such applications, and chemical stability is a prerequisite in the material used to impart specific physical properties. Glycerine is "made to order". It stays free from objectionable color, odor or taste almost indefinitely. Along with its stability, other talents pressed into service in varying combinations include its hygroscopicity, low volatility, solvent power and solubility, high viscosity, noncrystallinity, low toxicity, compatibility, and taste (sweet and pleasant).



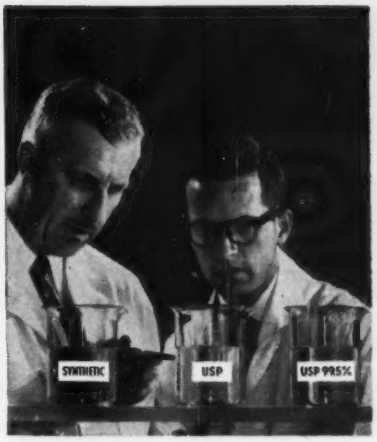
The big Dow plant at Freeport, Texas—first went on stream with Glycerine, Synthetic in 1955.

The Glycerines from Dow are three: *Glycerine, Synthetic* is the indicated choice in nearly all industrial applications. It was the first to go on stream at the big Dow plant at Freeport, Texas. Next came *Glycerine, USP*, to meet U.S. pharmacopoeia requirements, including glycerol content of 95%. Dow's quality runs, in fact, 96%—a strength many users wish because the viscosity is considerably below that of 99.5%, it is easier to handle, and does not freeze easily. Color is water-white for uses requiring high purity with taste and odor characteristics desirable for pharmaceutical and food uses (as well as for lighter colored alkyd resins in paints). And *Glycerine, USP 99.5%* – preferred by customers who find the 4% water in *USP* undesirable in their processes. It is identical with *USP* except that glycerol content is a minimum of 99.5% instead of 96%.

The basic fact behind the new stability of quality and supply that Dow's synthetic production has helped bring to the glycerine market is this . . .

Dow is Basic in Polyols—
in glycerine, as well as in the whole wide range of polyols it manufactures.

TRANSLATION: Whether in the well-known categories of the glycerines, the industrial glycols, the polyethylene glycols, the polypropylene glycols, or in the more venturesome developmental range of its "world's widest line of polyols", Dow makes *all* of the ingredients that go into the production of these polyols.



Three good ways to go in Dow Glycerine—every one of them *clearly* right.

To the buyer of chemicals the phrase "Dow is basic" means assurance of highest quality that can result only from complete control of all the building blocks that go into a polyol formulation. It means assurance of uninterrupted supply, because the manufacturer is an *original* source—completely independent of raw material problems. It means stable prices because ingredient costs are not subject to wide market fluctuations. And, in the realm of creative chemistry it means that there are literally *no material limits* to the range of polyol possibilities and improvements that are open to Dow and its customers.

* * *

Dow's "men that make the most of them" stand ready to help you make the most of the polyol products you need. The skillful team of scientists, technicians, production experts, sales force, in the course of their work, have acquired the knowledge you need to know about polyols. With them, the production and delivery of polyols are only the beginning. Their greatest pride and satisfaction come from following through to help you make the most of polyols in *your* applications. They are always at your service. If you have a polyol problem, why not call them . . . through the Dow sales office nearest you? Or write Chemicals Sales Dept. 1100 AM2-28.

THE DOW CHEMICAL COMPANY
MIDLAND, MICHIGAN

DOW

THE POLYOL FAMILY TREE

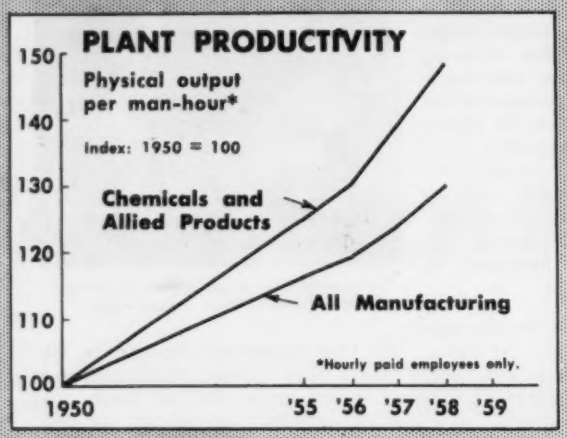
main branches include **Glycerine • Glycerine USP 99.5% • Propylene Glycol • Dipropylene Glycol • Ethylene Glycol • Diethylene Glycol Polyethylene Glycols • Polypropylene Glycols • Tripropylene Glycol Tetraethylene Glycol • Hyprose® SP80 • Hyprin® GP25 • Polyglycol 11 Series • Polyglycol 13 Series • Polyglycol 15 Series Polyglycol 166 Series (Polyepichlorohydrin) • Polyglycol 174 Series (polystyrene glycol) • Polybutylene Glycols • Dowanol® 122 Styrene Glycol**

The Industrial Glycols number many active members, among them three new products developed by Dow research—polyepichlorohydrin, polystyrene glycol, and polybutylene glycol. All three are adaptable as intermediates in the production of the new polyurethanes and in the surfactant field. Many promising applications in the paint, petroleum, detergent, plastic industries.

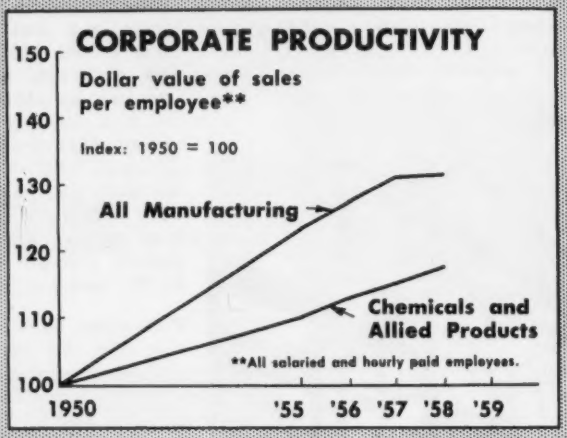
The Polyethylene Glycols are available in twelve molecular weights from E200 to E20,000, and ranging from viscous liquids through waxy and hard tough solids. Very useful as plasticizers, lubricants, solvents and as carriers in cosmetic and pharmaceutical preparations.

The Polypropylene Glycols "P" series liquid through entire molecular weight range, P250 through P4,000. Employed as lubricants, solvents, plasticizers and anti-foam agents. Polyglycol P2,000 (resin grade) has gained widespread acceptance for use in urethane foams.

Chemical Week
February 28, 1959



Chemical companies achieve big gains in traditional productivity—but significance of this yardstick is waning.



In broader measure of performance, chemical firms—heavy on equipment, specialists—lag other industries.

Big Productivity Boosts Bring

In U.S. chemical plants, production is up 7.7% and employment is down 2.6% from the prerecession month of Aug. '57 (charts above). At first glance, this figures out to a whopping 10.1% increase in productivity in 16 months. That sounds cheerful, but last week it was stirring a controversy that extended far beyond the industry itself.

In San Juan, Puerto Rico, AFL-CIO President George Meany emphasized the heavier load per worker indicated in the data. He told the AFL-CIO executive board convening there: "(Higher wages) and greater (consumer) purchasing power are needed, (also) a shorter work week. Continuing technological improvements and current job shortages suggest just two solutions: shoot 10% of the population, or get more spending power into the hands of consumers."

And management had its reservations, too, since the productivity boost hasn't always brought added profit. In his annual report to stockholders, Monsanto Board Chairman Edgar Queeny said: "The (past) year's profits do not reflect the economies, increased efficiencies and manufacturing cost improvements that were accomplished, as these were more than offset by heavy idle-plant charges, by substantial increases in wages and some salaries, by higher transportation rates and, above all, by substantial reductions in the selling prices of many of (our) products forced by highly competitive markets. Better returns remain management's prime concern. Further efficiencies and new technologies will be introduced, as will new products and new applications, which we anticipate will carry higher margins."

Further Gains Imminent: In traditional "plant productivity," chemical companies have been gaining at a faster clip than most other industries (*left-hand chart, above*). And, as Queeny indicates, chemical management intends to keep right on enhancing its ability to produce more goods more efficiently.

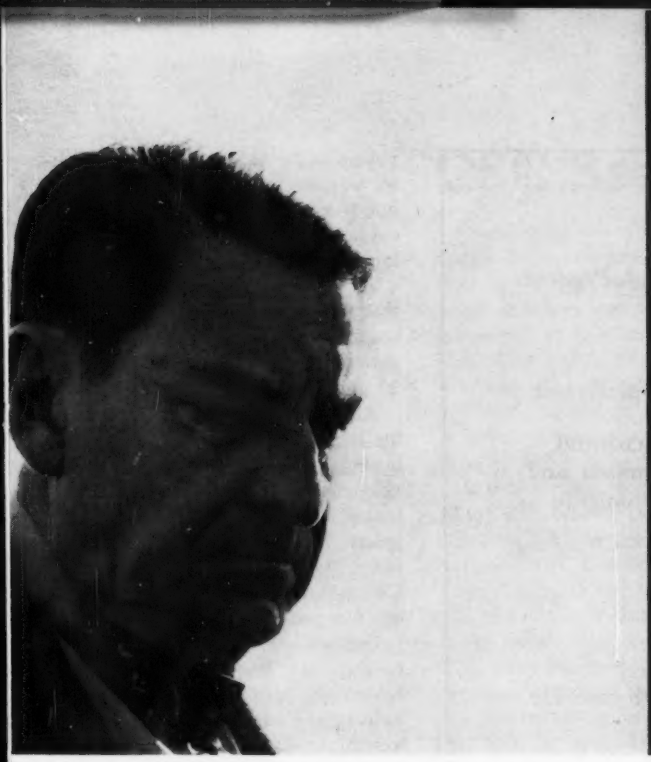
This week, Manufacturing Chemists' Assn.—following its annual plant construction survey—reports a new record in construction of chemical production facilities:

- Cost of 498 projects completed during '58—$1.78 billion.
- Cost of 216 projects now under construction—$1.05 billion.
- Cost of 88 additional projects scheduled for completion by the end of '60—$464.1 million.

In all, MCA's survey covers 802 plant projects by 287 companies; total cost is nearly $3.3 billion. Of that, $801.4 million is being invested in plants to make general organic Chemicals, $797.2 million for production of general inorganic chemicals. Investments in other product categories: plastics and resins, $392.7 million; synthetic fibers, $254.2 million; petrochemicals, $239.8 million; chemical-process metals, $174.8 million; chemical research laboratories, $157.2 million; fertilizer chemicals, $115.8 million; synthetic rubber, $53.5 million; and miscellaneous chemicals, $307.2 million.

CPI Shortcomings: But while chemical companies' excellence in "plant productivity" is reflected in these heavy capital investments in expansion and modernization, other—perhaps more meaningful—gauges of industry don't register so favorably for the CPI.

For example, in "sales per employee," makers of chemicals and allied products are well behind the all-manufacturing average (*right-hand*



MONSANTO'S QUEENY: The '58 efficiency gains were not enough; more new technologies are to be added.

WIDE WORLD

AFL-CIO'S MEANY: Jobs eliminated by gains in technology are 'gone forever'; now, U.S. aid is needed.

New Demands from Both Sides

chart, p. 18). One important cause of this lag: manufacturing industries, on the whole, slashed employment 7.3% between Aug. '57 and Dec. '58, while chemical companies trimmed their total employment only 1.1%.

One CPI concern that has managed a steeper-than-average reduction in work force: Dow Chemical, which had 28,628 employees at the end of '57 and 25,766 at the end of '58. But even this hasn't brought the desired improvement in profit margins—a yardstick that many regard as more realistic for measuring company performance than productivity.

Productivity No Cure-all: "We're doing more work with fewer people," Dow Vice-president Carl Gerstacker concedes. But other costs are rising out of proportion to increases in productivity—wages and salaries, taxes and transportation costs—and this situation adds up to a continuing squeeze on profit margins. The rise in productivity, he feels, is only a partial recovery of lost ground in rate of return.

To labor union officers, the recent increases in productivity are seen largely in terms of their immediate impact: loss of jobs and memberships. Thus, Meany at San Juan told *CW* that current steel output in the U.S. is the same as it was 20 months ago, but that the steel companies are achieving this with 100,000 fewer steel workers; and AFL-CIO Vice-President Walter Reuther was talking about organizing his unemployed auto workers for a "march to Washington." Another AFL-CIO Vice-President—O. A. (Jack) Knight, president of Oil, Chemical & Atomic Workers—estimates that about 10,000 of his members are unemployed; but he blames petroleum imports for many of the layoffs.

'Lost Jobs' Tabulation: At OCAW headquarters in Denver, the union's research staff calculates that from late '57 to late '58, there was a net loss of 44,000 jobs in industries in that union's jurisdiction. Here's how OCAW reaches that figure:

In chemicals and allied products, the Federal Reserve System's monthly output index rose from 190 in Oct. '57 to 194 in Nov. '58, and productivity increased 6.7%. If there had been no change in productivity, the companies would have needed 11,382 more production and maintenance workers; but actual employment of hourly paid employees was down 25,700. Adding these figures gives an "effective loss" of 37,082 jobs.

And similarly, OCAW arrives at an "effective loss" of 6,200 jobs in petroleum refining. This is less than the actual drop in hourly paid employment because production last November was still not up to the level attained in Sept. '57.

Political Implications: When tossed into the national political arena, these conflicting viewpoints over the meaning of recent productivity and cost trends may have major effects on the nation's future business climate. Profits and unemployment are sure to be big factors in the bitter fight building up between the Republican Administration and the Democratic Congress over inflation and economic growth.

In San Juan, AFL-CIO leaders are wrapping up a legislative program to be lobbied heavily on Capitol Hill. Its three key points:

- Federal loans and grants to depressed areas to build new industries.
- Big public works programs to open up new jobs—particularly for semiskilled workers.
- Federal unemployment benefits —at least 65% of take-home pay.

Sprouting and Growing Alliances for Oil-Chemical Alliances

Parent Companies	*Offspring*	*Chief Products*
NEWLY ESTABLISHED:		
Sun Oil American Viscose	AviSun	polypropylene
Standard Oil (Ohio) Atlas Powder	Solar Nitrogen	agricultural chemicals and acrylonitrile
CONSTRUCTION PLANS ANNOUNCED:		
Olin Mathieson Sun Oil	SunOlin	urea
Richfield Oil Stauffer Chemical	American	vinyl chloride
MAJOR EXPANSION COMPLETED:		
Texas Co. American Cyanamid	Jefferson	ethylene chemicals

Add Two in Petrochemicals

Add two more oil - and - chemical joint ventures this week to the fast-growing roster of U.S. petrochemical producers:

• American Viscose and Sun Oil Co. are forming a new affiliate, AviSun Corp., to make polypropylene.

• Standard Oil of Ohio is teaming with Atlas Powder to form Solar Nitrogen Chemicals Inc., a new company that will take over Sohio's entire line of nitrogen chemicals. Not included: the new multimillion-dollar acrylonitrile plant to be completed at Lima, Ohio, early next year (*see also p. 69*).

AviSun, newly incorporated in Delaware, is capitalized at $100,000. Sun and Viscose have equal interests.

AviSun has leased Koppers Co.'s Port Reading, N.J., plant, will convert one of its linear polyethylene lines to polypropylene. Conversion cost is estimated at $1 million, with completion scheduled for midsummer. Koppers personnel will operate the plant, under AviSun's technical supervision; Koppers will have no equity interest in the new company.

Capacity of the converted plant will be 20 million lbs./year. But officials hint that a second polyethylene line at the Port Reading plant could also be converted, if markets develop.

New Process: Sun reports that a newly developed process will be used at the plant—although one believed to be not radically different from methods now used by other producers. Sun developed the process independently, will not require licenses from other firms, a company spokesman said.

Sun will supply concentrated olefin raw materials by truck and tank car from its Marcus Hook, Pa., refinery. But officials emphasize that the new company will be free to buy raw materials from other producers as well.

Viscose's chief interest in the new firm centers on film and fiber. Viscose will add film and fiber production units—all under AviSun management —to its Marcus Hook plant. Cost is estimated at "several million dollars."

The new venture will make AviSun the second producer of polypropylene in the U.S. Until now, Hercules was the lone large-scale producer, but Humble Oil and Eastman Chemical have announced plans for producing polypropylene.

A Hercules spokesman tells *CW* that the company can rapidly expand output to 40-50 million lbs./year. Its current capacity is stated to be about 20 million lbs./year.

And Hercules reports that most of the large U.S. textile firms have been buying its resin for research and development work. One Hercules customer already is producing polypropylene film (*CW Technology Newsletter, Aug. 16, '58*); and other users are expected to introduce polypropylene film products "soon."

Overseas, others are mounting the bandwagon. Pechiney and Societe Normande de Matieres Plastiques have signed an agreement with Montecatini, to make polypropylene under Montecatini and Ziegler licenses (*CW, Feb. 21, P. 34*).

Holding Company: The other newly formed joint petrochemical company in the U.S.—Solar Nitrogen—will be a holding and managing concern.

All of Sohio's ammonia and petrochemical units at its Lima, O., complex will come under the wing of the new company—though they'll continue to be operated by Sohio Chemical Co., a wholly owned Standard Oil subsidiary. And Sohio will serve as sales agent for Solar's broad line of nitrogen chemicals. Included: anhydrous ammonia, aqua ammonia, more than a dozen basic nitrogen solutions, nitric acid and urea.

New Face in 'A' Fuel

Spencer Chemical swept into the nuclear industry this week, confident that its new, assertedly cost-cutting, process would help it slice a major chunk out of the already crowded uranium fuel market.

It has started building a 100,000-lbs./year uranium dioxide fuel plant at its Jayhawk Works (near Pittsburg, Kan.). The plant is due onstream by midsummer, bolstering output of Spencer's 50,000-lbs./year pilot plant, which has been operating since early last year.

Spencer's reason for diversification: "We're going to make money." On a "modest" total investment (reportedly

close to $1 million), Spencer expects to earn "just as much as if we had sunk the money into an ammonia plant instead; and just as soon, too." This could mean something like 15%/year.

Reason for Cheer: Spencer bases its optimism on market predictions and its new process—its plant will be the first to use a continuous process for uranium dioxide.

But the competition is bound to be stiff. By Spencer's own estimates, the total U.S. market for fiscal '60 will be a mere 200,000 lbs. But in the next decade, the company expects demand to rocket from 280,000 lbs. in '61, to 950,000 lbs. in '65, and to 1.9 billion lbs./year by '70. On top of this, it pegs European demand at 30,000 lbs. for fiscal '60, swelling to 600,000 lbs./year before '70.

These estimates don't count "any of the many promising but less certain applications," Spencer says. "If anything, we're inclined to feel that we've been very conservative in our estimates."

Breaking In: In breaking into this market, Spencer admittedly is facing some formidable competition, notably, Mallinckrodt and Davison.

Spencer will sell the fuel material as powder: Davison and Mallinckrodt, more highly integrated than Spencer will be, carry the process another step: fabricating it into pellets or other shapes.

Still, Spencer feels it holds a vital cost edge. The new plant's chemical requirements—ammonia, ammonium nitrate and nitric acid—are on tap right at the Jayhawk site.

Trump Card: But, Spencer claims, its new process is its trump card. Because it is continuous, Vice-President Harold Dinges told *CW*, it will be able to turn out a more uniform product than batch operations can. This, he asserts, will virtually eliminate scrap loss when the powder is sintered and shaped into fuel elements. Scrap losses now run as high as 60%.

Experience with its pilot operations has encouraged Spencer. Test samples, it reports, have won such an enthusiastic reception from nuclear reactor prime contractors—e.g., General Electric, Westinghouse, Babcock & Wilcox, and Atomics International—that its pilot plant has been busy almost since startup turning out semicommercial quantities.

CSC Seeks New Leadership

Commercial Solvents Corp. is in the market for a new president this week, after a boiling controversy among board members was climaxed by the resignation of J. Albert Woods, president since 1950.

Woods, 62, will serve as a consultant until the end of 1962; Maynard Wheeler, formerly senior vice-president, is filling in as acting president until a new chief executive is found. Along with Woods, three other board members will drop their posts this year.

Pressure in a basic policy controversy reportedly had been building up for more than a year. On one side stood Woods and a few top executives and directors; on the other, a group of directors and major shareholders, including Jeremiah Milbank, Jr., Wall Street financier, whose family reportedly controls some 25% of Commercial Solvents' stock.

Profits Plunge: Details of the controversy remain a tight secret. But several sore spots within the company may have been the cause.

Most obvious source of stockholder dissatisfaction: CSC's profit performance. In the 10-year period, 1948-57, profits plunged 76.3%, while total profits of the chemical and allied products industries more than doubled. The company's sales growth hasn't given much cause for cheer, either. From $48 million in '48, sales rose only 37.3%, to $65.9 million, in '57. Sales for the entire industry climbed 67.5%.

Part of the profits drop can be attributed to the recession, which plunged CSC profits to $1.5 million (compared with $3.3 million in '56), the lowest point since '52. Startup costs of four plants aggravated the situation.

For '58, the company's total sales will probably tally slightly below the '57 total, but profits should steady.

During the last five years, the company has added relatively few major products to its manufacturing line—notably nitroparaffins (including nitro fuel for racing cars); cycloserine, an antibiotic for fighting tuberculosis; and zinc bacitracin, an antibiotic feed supplement.

No Magic Carpet: While other companies have found pharmaceuticals a magic carpet to profits, CSC has found the going to be considerably tougher. The company has long been a supplier of bulk pharmaceuticals, although they account for a relatively small portion of total sales, rank sixth among CSC's seven product groups.

CSC got into the ethical drug business in '44, when it became the first producer of crystalline penicillin. It began marketing a limited line of ethicals under the tradename CSC Pharmaceuticals.

But disappointing sales and the strain of trying to maintain a large sales organization led CSC to drop its ethical drug business in '53.

Faith in Nitroparaffins: CSC places its greatest faith in the future of nitroparaffins, which it has been developing for years. The company says nitroparaffin sales have picked up in recent months, expects to be selling capacity quantities by midyear.

A big cause of CSC's dim profit picture and a likely major bone of contention are Solvents' ethanol and antifreeze operations.

Despite its position as a major marketer of ethylene glycol antifreeze and a substantial factor in ethanol sales, the company has not integrated these products into its production pattern. Since it does not produce glycol or synthetic ethanol, CSC suffers a profit pinch in competing with integrated producers.

Ethylene Problem: For a time, CSC contemplated going into ethanol production, and planned a joint venture with Columbia Gas System to produce ethylene. But cost factors prompted it to withdraw from the deal. Despite the recent acquisition of natural gas holdings near its Sterlington, La., plants, the company says there are no plans "at the present moment" to produce ethylene there, although it is an eventual possibility.

CSC, moreover, says it doesn't contemplate building its own ethylene glycol plant, with the nation's capacity already far in excess of demand.

A more likely way out of this dilemma is a spin-off of the antifreeze operation. For some time, CSC has been considering offers by three or four ethylene glycol producers. With last week's reshuffling of authority, observers believe, the odds are more favorable to a sale.

COMPANIES

Koppers Co.'s Follansbee, W.Va., plant is almost back to normal following a $1.5-million explosion and fire that leveled two storage tanks (*CW Business Newsletter, Feb. 7*). The plant is operating at close to 100% of capacity this week. Cause of the blast was still undetermined.

•

American Asbestos Mining Corp. (New York and San Francisco) has signed an agreement with Jefferson Lake Sulphur Co. (New Orleans, La.) permitting the latter to determine the extent of asbestos deposits on American Asbestos-owned property in Calaveras County, California.

•

Rexall Drug Co. (Los Angeles) is acquiring Chippewa Plastics Inc. (Chippewa Falls, Wis.) through an exchange of stock. Chippewa shareholders will be asked to approve terms calling for exchange of one Rexall share for each two common shares of Chippewa—with adjustments for the latter's outstanding preferred stock.

•

American Metal Products Co. (Detroit, Mich.) has acquired Davis Engineering Corp. (Elizabeth, N.J.) in a cash transaction. AMP President Andrew Mras said the purchase is part of the company's current diversification and acquisition program. Davis makes heat exchangers for marine use and similar equipment for chemical process industries.

•

Vitro Corp. of America is acquiring Crane Co.'s (Chattanooga, Tenn.) equity interest in Heavy Minerals Co. The purchase gives Vitro 87½% ownership of the thorium, heavy mineral and rare-earth chemicals producer. Holding a minority interest is a French group, Societe de Produits Chimiques des Terres Rares.

EXPANSION

Boric Oxide: American Potash & Chemical will add an $800,000 boric oxide plant to its chemical complex in Trona, Calif. Construction will get under way soon, with production slated for late this year.

Also in blueprint stages is an expansion of the company's boric acid plant at Trona.

•

Soda Ash: Intermountain Chemical Co., affiliate of Food Machinery and National Distillers, will boost soda ash capacity 20% at its Westvaco, Wyo., plant, bringing total capacity to 470,000 tons/year. New construction is scheduled for completion soon.

•

Coke Processing: Kaiser Aluminum & Chemical Corp. will build a 70,000-tons/year coke calcining unit near Purvis, Miss. Construction will begin next month, with startup slated for midsummer. Cost: $500,000. Petroleum coke raw material will come from Pontiac Eastern Corp.'s nearby refinery.

•

Urethane Foam: Nopco Chemical Co.'s Plastics Division will triple the size of its North Arlington, N.J., plant, install equipment for a sixfold increase in polyurethane foam capacity.

The move, says divisional Vice-President George Stier, stems from "phenomenal increases" in urethane demand. Estimated '59 consumption: 70 million lbs.

•

Cement: Lehigh Portland Cement is planning an $8-million expansion of its Alsen, N.Y., plant. Both production and storage facilities will be increased.

•

Chlorine-Caustic: Diamond Alkali is budgeting $2 million for modernization of its chlorine-caustic soda plant at Painesville, O. Old cells will be replaced with new types requiring 60% less space. The project is slated for completion this fall.

FOREIGN

Maleic Anhydride/Britain: Monsanto Chemicals Ltd., British affiliate of Monsanto Chemical (St. Louis), will build a 15-million-lbs./year maleic anyhydride plant at Newport, Monmouthshire. The new unit is slated for completion late in '60. Contractor is Scientific Design Co. Inc. (New York).

•

Synthetic Fiber/East Germany: Reports from East Berlin indicate a new, 10,000-tons/year fiber plant will be built adjacent to the Friedrich Engels Chemiefaserwerke plant in Primnitz. The plant would make an East German-developed fiber called Prelana. Reportedly, completion is slated for April '61. Soviet machinery and equipment is to be installed.

•

Synthetic Fiber/Red China: Peking radio reports chemists in Suchow, eastern China, have developed a process for making nylon-11 fiber. The synthetic that is claimed to have good insulating, mechanical and erosion-resistant properties, can be used to make parachutes, auto tires, fishing nets, and aircraft tanks.

•

Atomics/Britain: Three British companies—Vickers, Rolls-Royce and Foster Wheeler—have formed a new company, Rolls-Royce and Associates, to design and build nuclear power equipment. Officials report the new firm hopes to be active in all fields of nuclear power.

•

Ammonia/Greece: A group of West German and French companies is expected to build a 270-tons/day ammonia plant at Ptolemais, in Macedonia, for the Greek government. About $13.5 million in foreign capital would finance the project.

Washington
Newsletter

CHEMICAL WEEK
February 28, 1959

Over $100 million in R&D contracts have been let by the National Aeronautics and Space Administration since last Oct. 1. Another $120 million will be awarded to industry by June 30. There is still more —$330 million—slated for fiscal '60. Total budget for the new space agency for fiscal '60 is $485.3 million.

Around 20% of NASA's money will go into space-propulsion technology, including the development of solid-fuel rockets, high-energy fuel rockets, and the 1.5-million-lb. thrust, single-chamber nuclear rocket engine.

About 50% of the money will go for procurement of vehicles and instruments covering sounding rockets, earth satellites, lunar probes and deep-space research.

Some 20% will be channeled toward manned space-flight projects, including construction of the first manned space capsule for Project Mercury. Around 6% will be for specific investigations of satellite use in the field of meteorology and communication. The balance of the money will be used for tracking and data acquisition and new research.

The new space agency plans to pattern its contracting along the same lines as set forth by the Armed Services Procurement Act. No "new system" of procurement regulations will be forced on industry, the space agency says. Whenever practicable, NASA will tap one of the military services to handle the contracting arrangements. It will let contract audits be dealt with similarly so that industry doesn't have to separate negotiations on such things as allocating overhead costs, etc.

•

Here are examples of R&D contracts that have been let so far; government agencies listed are the contracting agents between NASA and industry: $8.2 million to Jet Propulsion Laboratory for general research, and $2 million to develop a 6,000-lb. thrust, storable propellent system; $110,000 to Yale University for molecular study; $270,000 to Bureau of Standards for research on rubidium; $10 million to Rocketdyne Division of North American Aviation for 1-million-lb. thrust, single-chamber engine; $110,000 to Thiokol, Inc., for manned space-rocket development; $4.5 million to the Army to develop Redstone boosters; $1.9 million to AEC for nuclear rocket engine development under Project Rover. Contracts totaling $110,000 to Douglas Aircraft for propellent tank assemblies, and $180,000 to Solar Aircraft to furnish rocket-thrust chambers and necessary tooling, are related to high-energy fuel rockets.

•

The Senate Small Business Committee will hear complaints that larger companies are freezing out some small companies through control of patents.

Washington Newsletter

(Continued)

A related study by the group, headed by Sen. John Sparkman (D., Ala.), will check up on the role government patent policy plays—particularly in financing research and development and in granting patents to larger firms.

The committee, in a 29-point agenda for '59, also has assigned to subcommittees inquiries into the impact of government procurement, as well as mergers, on small business. Subgroups also will study small business's place in foreign trade. A tax subcommittee expects to publish a layman's guide to profit potentials in the foreign trade market.

•

FTC is readying rules required by the textile fiber labeling law, plans to have them by June 3. The law and regulations become effective nine months later, March 3, 1960.

The commission will hold public hearings on 45 proposed rules in Washington beginning March 10. One rule defines generic names for 16 synthetic fibers—such as nylon, rayon and saran. It's hoped that the rule will end confusion caused by use of multiple tradenames to describe the same kind of fiber.

A related proposal sets up a procedure under which fiber manufacturers are to apply to FTC to get generic names for new fibers for which such names have not been established.

•

A law to permit use of a coal-tar coloring for oranges for the next two years will clear Congress easily before the March 1 deadline. It permits use of Citrus Red No. 2, considered a safer substance than the Red No. 32 recently removed from the list of approved colorings. Citrus Red No. 2, says a committee report, can harm animals but will not hurt humans in the quantities necessary to tint oranges.

•

A stepped-up program in saline-water research is recommended in a U.S. government report criticizing "overly conservative" adminstration of the program since its beginning in '53.

The report, prepared by a five-man team of top department officials and outside advisors, recommends increased funds for research, authority for long-term contracts, and administrative reorganization. The '60 budget request for research and development is $1,355,000, a slight increase over the current year. In addition, the department has asked $300,000 for engineering designs on five demonstration plants, each of which will use a different process. March 2, Interior will name the process that gets first priority.

New director of the Office of Saline Water is A. L. Miller, an M.D. and an eight-term GOP Nebraska congressman. Miller, a one-time chairman of the House Interior Committee, and author of the Miller pesticide tolerance amendment, was defeated last November. He succeeds David S. Jenkins, career civil servant.

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Odds Favor Tax Break for Foreign Traders

Chemical process industries executives eyeing the CPI's rapidly growing stake in foreign operations last week heard good news: U.S. foreign investors stand a good chance of winning some of the tax concessions called for in a bill introduced in Congress by Rep. Hale Boggs (D., La.).

CPI management interviewed last week by *CW* agreed that the concessions would substantially increase the flow of U.S. private capital abroad, help reduce the foreign demand for U.S. aid.

Meaning for Management: Here's what the proposed law (H.R. 5) would offer U.S. businessmen:

- Tax deferral. A special category of U.S. corporations would be created, offering U.S. firms the same advantages they now obtain only when they set up foreign subsidiary corporations. Special-category corporations would not have to pay U.S. taxes on income from foreign operations until it was distributed either to the parent corporation or to stockholders.
- Tax exemption on transfers of business property. This provision would eliminate the tax on transfer or exchange of assets from a U.S. corporation to a foreign corporation. Such a transfer now requires a ruling from the Commissioner of Internal Revenue that the transaction is not designed to avoid federal income taxes by taking advantage of lower tax rates in foreign countries.
- Tax computation on an overall basis. This measure attempts to help eliminate double taxation by permitting U.S. firms to lump all their foreign tax credits when computing U.S. taxes. The present law provides that credit against U.S. taxes for taxes paid to a foreign country applies only to earnings in that country and that any excess of credits cannot carry over to offset the federal tax on earnings in another country.

For example, a company earns $100,000 in each of two foreign countries. Country "A," where the tax rate is 60%, gets $60,000 tax. Country "B," in which the rate is 40%,

Rep. Boggs: His bill's tax favors would spur foreign investments.

CW PHOTO—ALFRED WAGG

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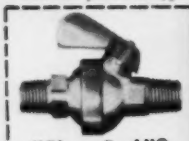

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What the Boggs bill would do for CPI firms with overseas investments

- Permit setting up "foreign business corporations," which could defer payment of federal taxes on income earned abroad until income is transferred to the parent company.
- Exempt from federal taxation transfers of business property used for the purpose of investing abroad.
- Extend to all U.S. firms doing at least 90% of their business abroad the 14% reduction in federal corporate income tax.
- Give taxpayers a chance to minimize double taxation on foreign income by lumping all their foreign tax credits.
- Permit tax "sparing" by allowing taxes waived by foreign countries to be counted as paid federal taxes.

gets $40,000 tax. The firm's income in each country is taxable in the U.S. at the rate of 52%, or $104,000, less the credit for taxes paid each.

The $60,000 paid to country "A" is $8,000 more than full credit against $52,000 of U.S. taxes. But the company is not allowed to credit this "surplus" against its U.S. tax on income in country "B," even though the $40,000 tax paid to country "B" is $12,000 less than the U.S. tax on income in that country.

Thus, the company pays foreign and U.S. taxes of $112,000 on $200,000 of income, whereas, under the proposed law, with tax credits lumped, the total foreign and U.S. tax would be $104,000.

• Tax "sparing." U.S. firms doing business abroad would be credited with taxes waived by foreign governments. Today, tax incentives offered by foreign governments do not help a U.S. foreign investor, since any reduction in foreign taxes merely increases the U.S. tax up to 52%.

Industry Reaction: CPI firms interviewed by *CW* called the bill a beneficial, significant step toward promoting foreign investments. One comment, from an Allied Chemical Corp. spokesman: "The Boggs bill is in line with industry recommendations and should increase the flow of U.S. investment capital abroad."

E. G. Hesse, director of finance and administration, Cyanamid International, American Cyanamid, told *CW*, "In international trade today, the U.S. foreign investor operates with one hand tied behind his back.

"U.S. business may overcome this obstacle by incorporating abroad; but given equal opportunity, it would prefer to operate under the U.S. flag. The Boggs bill provides this opportunity. Moreover, it seeks to substitute trade for aid."

Administration's Position: But the Boggs bill or variants of it have little chance of passing Congress without strong Administration backing, observers say. Rep. Wilbur Mills (D., Ark.), chairman of the Ways and Means Committee, has indicated that he will not even hold hearings on the Boggs bill this session. His opposition centers on the provision for a 14% reduction in the corporate tax rate for foreign business operations.

In this situation, the Administration either will support the Boggs bill, amended to exclude the tax cut, or, more probably, will introduce a bill of its own.

Outlook: On balance, it looks as though tax deferral and tax "sparing" would provide most of the stimulus to foreign investment that a straight cut in the U.S. tax rate would offer and still not threaten the Treasury with important losses.

How much incentive such measures would provide is open to debate. As one Washington tax expert puts it, "The role of government in encouraging private foreign investment is not to direct, but to lead. Tax incentives would provide that lead."

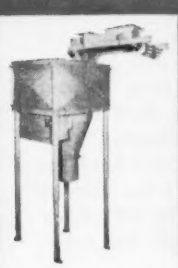
Appearance may be improved through better design, sharper color printing, reproportioning, or better choice of outside wall.

A frank discussion with us may result in a more attractive bag, reduced production costs and increased sales of your product.

When will you talk with our representative?

The Newest **KRAFTPACKER**

will handle any free-flowing material f-a-s-t-e-r, with more accuracy, than any bag filling machine of its type!



KRAFT BAG CORPORATION

Gilman Paper Company Subsidiary

630 Fifth Avenue, New York 20, N. Y.
Daily News Bldg., Chicago 6, Ill.

Integrated mills at St. Marys, Georgia and Gilman, Vermont

Gilman PAPER CO.
• St. Marys Kraft Corp.
• Command Tape Div.
• The Gilbound Corp.
• Kraft Bag Corp.

☐ We are interested in improving our bag.
☐ We are interested in your Kraftpacker.

CW

NAME OF COMPANY_____

ADDRESS_____

CITY_____ ZONE____ STATE____ PRINCIPAL_____

PRODUCT MFD._____

15,654,650*

people with an estimated effective buying income of

$22,446,360,000*

are within the overnight distribution radius of

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Florida

Southeast's great seaport and distribution heart, JACKSONVILLE, offers a vast market, people-wise and money-wise, to distributors and manufacturers.

Further, Jacksonville offers many, many plus advantages for plant location, branch offices and warehouses for a wide variety of companies.

Find out about Jacksonville's industrial and marketing attractions. A letter today will bring you free sound and factual information kit . . . or we'll be happy to provide a special survey — fully confidential — made to your specifications.

*Source, 1958 Sales Management's Survey of Buying Power

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ADMINISTRATION

LEGAL

Alcoa Damage Suit: Aluminum Co. of America's recent settlement of a $26,320 treble damage suit focuses attention on a poser particularly significant to CPI firms: When is it expedient to settle a pollution damage suit out of court?

Alcoa settled for $5,000 a suit by an orchard owner who alleged that Alcoa's Wenatchee, Wash., reduction plant was responsible for air pollution damage to nearby peach trees.

W. N. Farquhar, Wenatchee Works manager, said that the settlement "in no way implies that emanations from the smelter were responsible for any damage incurred at the orchard." Obtaining scientific proof to the contrary, he said, would have taken years of effort and substantially more money than was involved in the claim. The settlement permits Alcoa to inspect the orchard "to pursue an investigation of the actual cause of the problem," Farquhar said.

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Pfaudler-Permutit Settlement: And in another settlement, Pfaudler-Permutit called off its $723,831 suit against Presto Plastic Products Co. (New York). Pfaudler-Permutit had sued to obtain a sum of money Presto allegedly owed it for materials and services.

According to Pfaudler-Permutit, Presto had paid $265,573 before the settlement, but refused to pay the balance claimed. In settling, Presto paid $250,000 more.

LABOR

Moving Toward Merger: Odds are rising that AFL-CIO's two chemical unions will merge before the year is out. It's now definite that International Chemical Workers and Oil, Chemical & Atomic Workers unions will hold their 1959 conventions in Cleveland starting Oct. 5, and preparations for the proposed unification appear to be in progress.

A joint committee is drawing up a suggested constitution, and by May 15 the unions will have decided whether to submit the draft to the two conventions in October. One plausible report: that ICWU President Walter Mitchell already has decided to step aside and let OCAW President O. A. (Jack) Knight run unopposed for presidency of the merged union. "Somebody has to give way," Mitchell reportedly is saying, "and it might as well be me."

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Locals Merge: And in Louisville, Ky., local central bodies of the old AFL and CIO unions are on the verge of a merger that would confront area management with a single, powerful union of between 40,000 and 50,000 members.

A merger agreement and constitution—already presented for executive boards' approval and membership ratification—would unify the Louisville Federation of Labor and the Louisville Industrial Union Council, thus creating the Greater Louisville Central Labor Council.

KEY CHANGES

William G. Reynolds and **Joseph H. McConnel** to executive vice-presidents, Reynolds Metals Co. (Richmond, Va.).

Francis Cabell Brown to director, ACE Industries (New York).

Henry M. Chance II to director, Pennsalt Chemicals Corp. (Philadelphia).

Keith R. Cranker and **Joseph W. Mackenzie** to directors, Plumb Chemical Corp. (Philadelphia).

E. J. Black to vice-president, sales; **M. A. Pardieck** to vice-president and treasurer; **W. J. Crepeau** to secretary; Stepan Chemical Co. (Chicago).

David L. Merrill to vice-president, Alcon Laboratories (Fort Worth).

Harry H. Balthaser to president, Fome-Cor Corp. (Springfield, Mass.).

Robert L. Beyer to vice-president in charge of sales and public relations, Spencer Kellogg & Sons (Buffalo, N.Y.).

William E. Montgomery to vice-president in charge of sales and operations, Thompson Chemicals Corp. (St. Louis, Mo.).

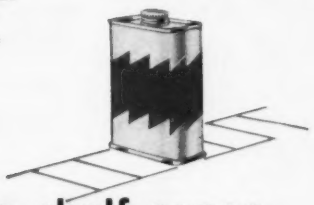
Lawrence M. Roberts to senior vice-president, Research-Cottrell, Inc. (Bound Brook, N.J.).

Paul L. Lonnecker to vice-president—general sales manager, Thompson-Hayward Chemical Co. (Kansas City, Mo.).

Continental "F" style cans make displays that sell

Easy stacking

"F" style cans have a recessed bottom that fits securely on top of can below. Floor and counter displays stay attractive no matter how high you stack them.

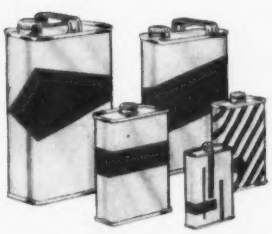


Save shelf space

Oblong "F" style cans fit together snugly without lost space per shelf foot, get greater emphasis on *your* product. It's easy to create mass displays that create impulse sales with "F" style cans.

Superb lithography

Continental's excellent lithography gives your product sparkling sales appeal. Broad can surface allows more display space for a powerful sales message.

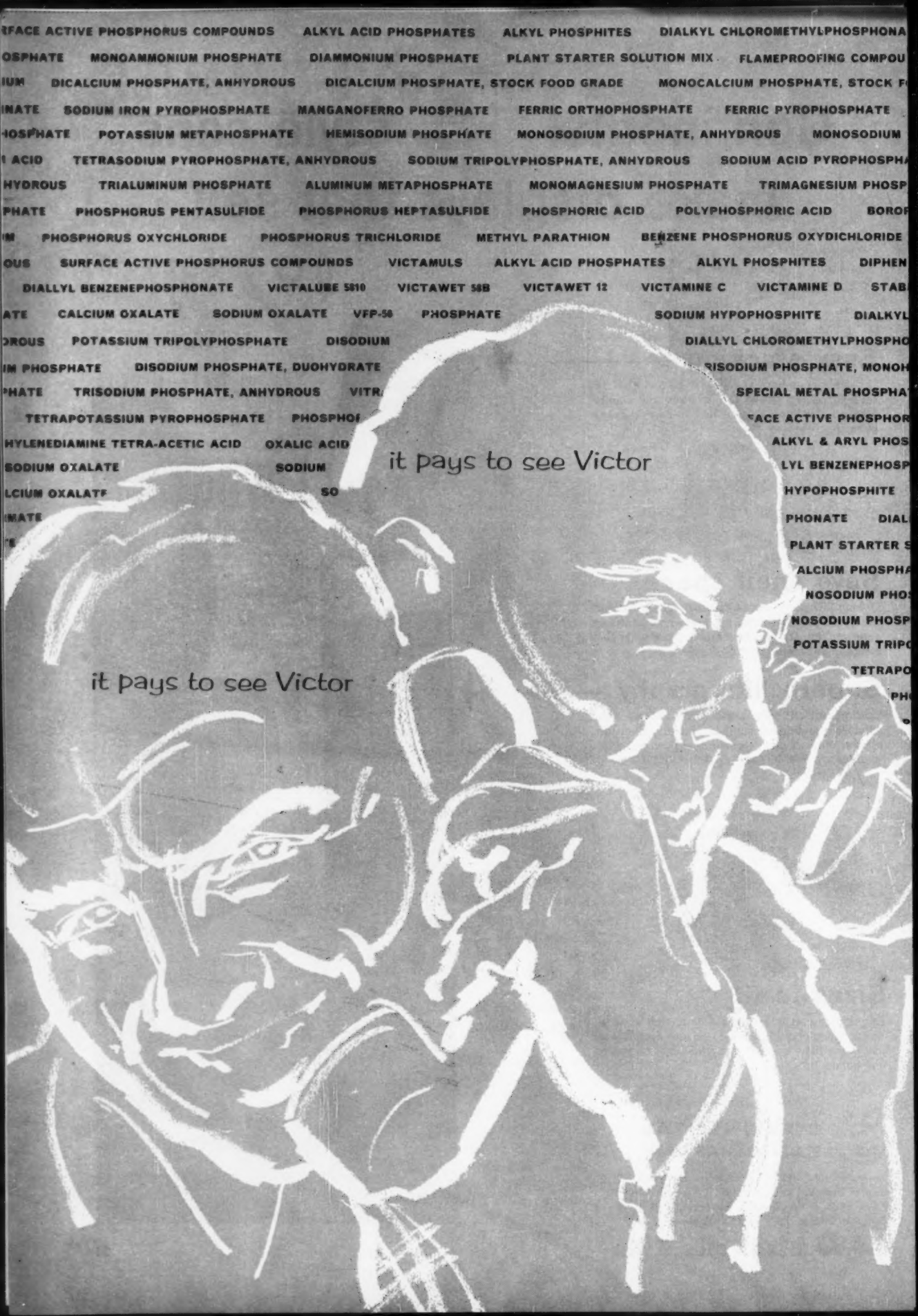


Sizes to fit

Displays pay off when the customer sees what he wants. Continental "F" style cans are available in five convenient sizes ranging from eight ounces to one gallon.

CONTINENTAL CAN COMPANY

Eastern Division: 100 East 42nd Street, New York 17
Central Division: 135 South La Salle Street, Chicago 3
Pacific Division: Russ Building, San Francisco 4
Canadian Division: 5595 Pare Street, Montreal, Que.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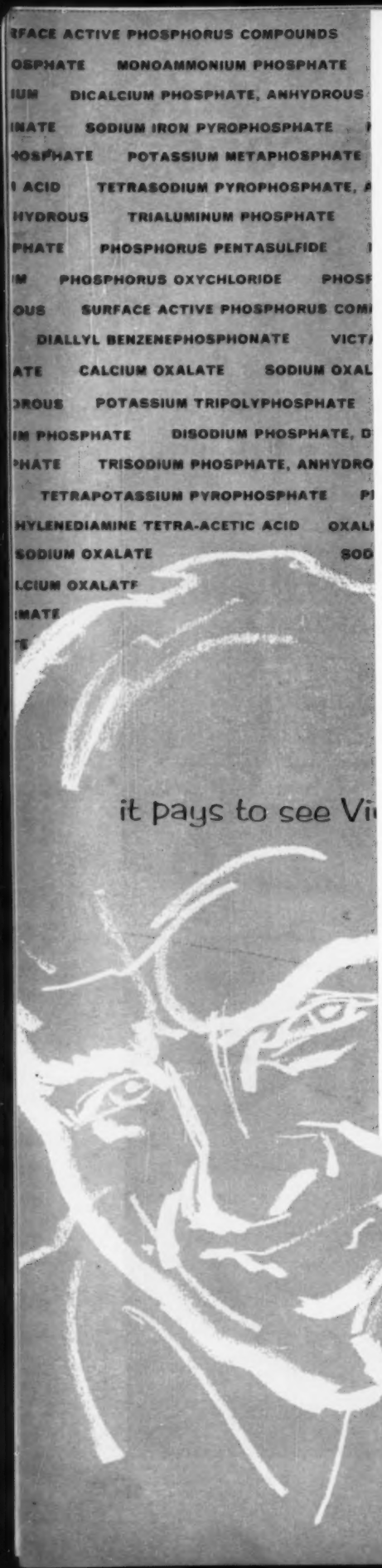

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For 61 years, Victor chemists, and other professionally trained scientists have devoted much of their time to investigating and developing entirely new families of phosphorus derivatives.

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What you *can* count on though, is Victor's versatile organophosphorus productive capacity. These facilities are at your beck and call—as is our chemical know-how—to produce pilot plant and commercial quantities of a long list of organophosphorus compounds. Or, if you have need for some seemingly unrelated product, we would welcome the opportunity to discuss it with you.

There's no obligation when you send for a list of our newest organophosphorus derivatives. Just fill in the coupon on the back page and mail it to: Victor Chemical Works, Box 271, Chicago 90. You'll see why many research men say, "It *pays* to see Victor."

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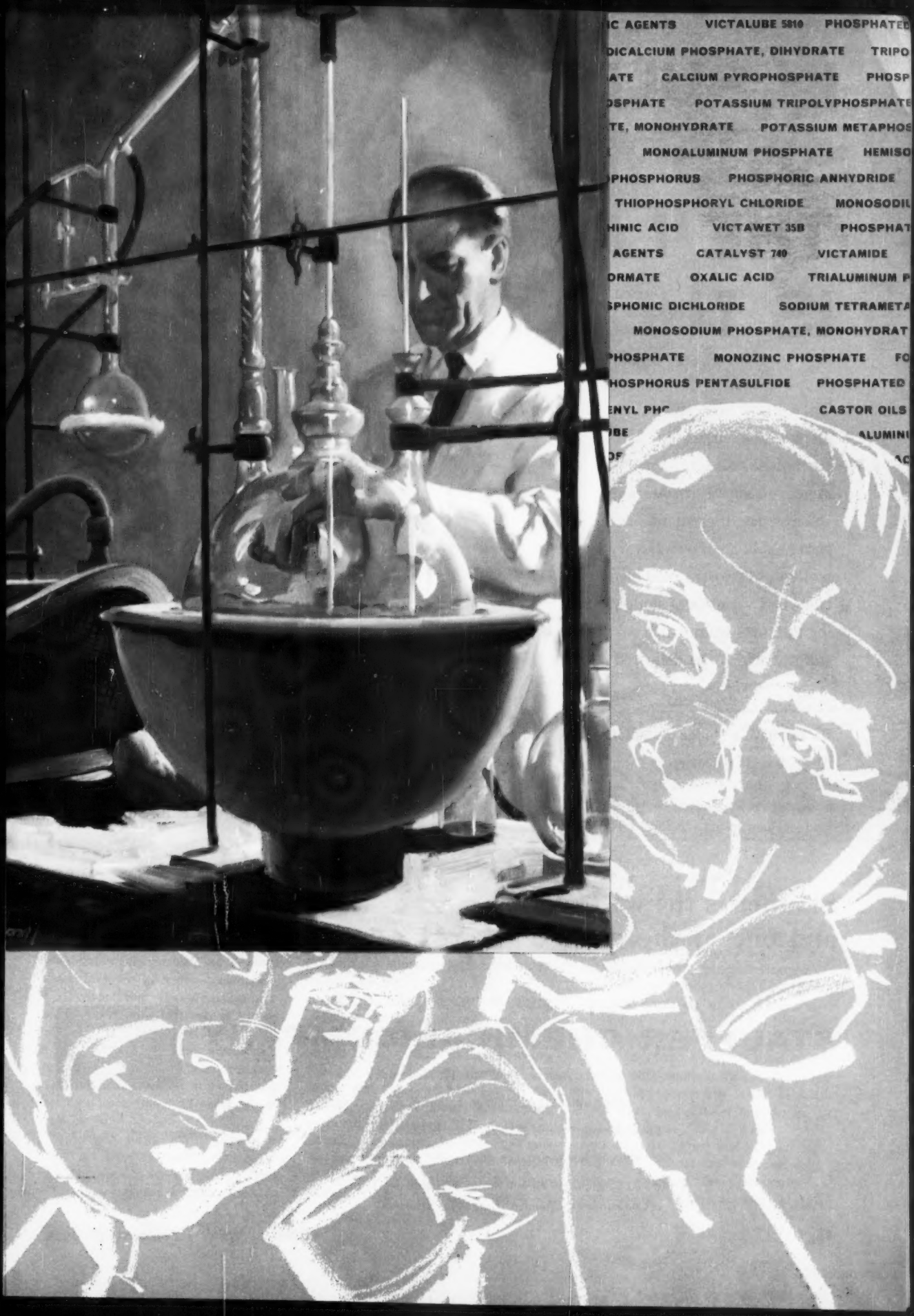
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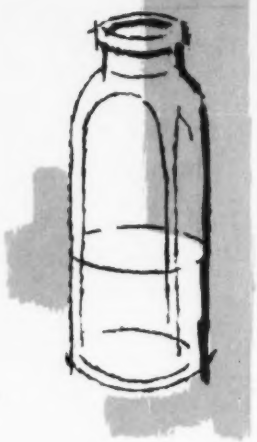
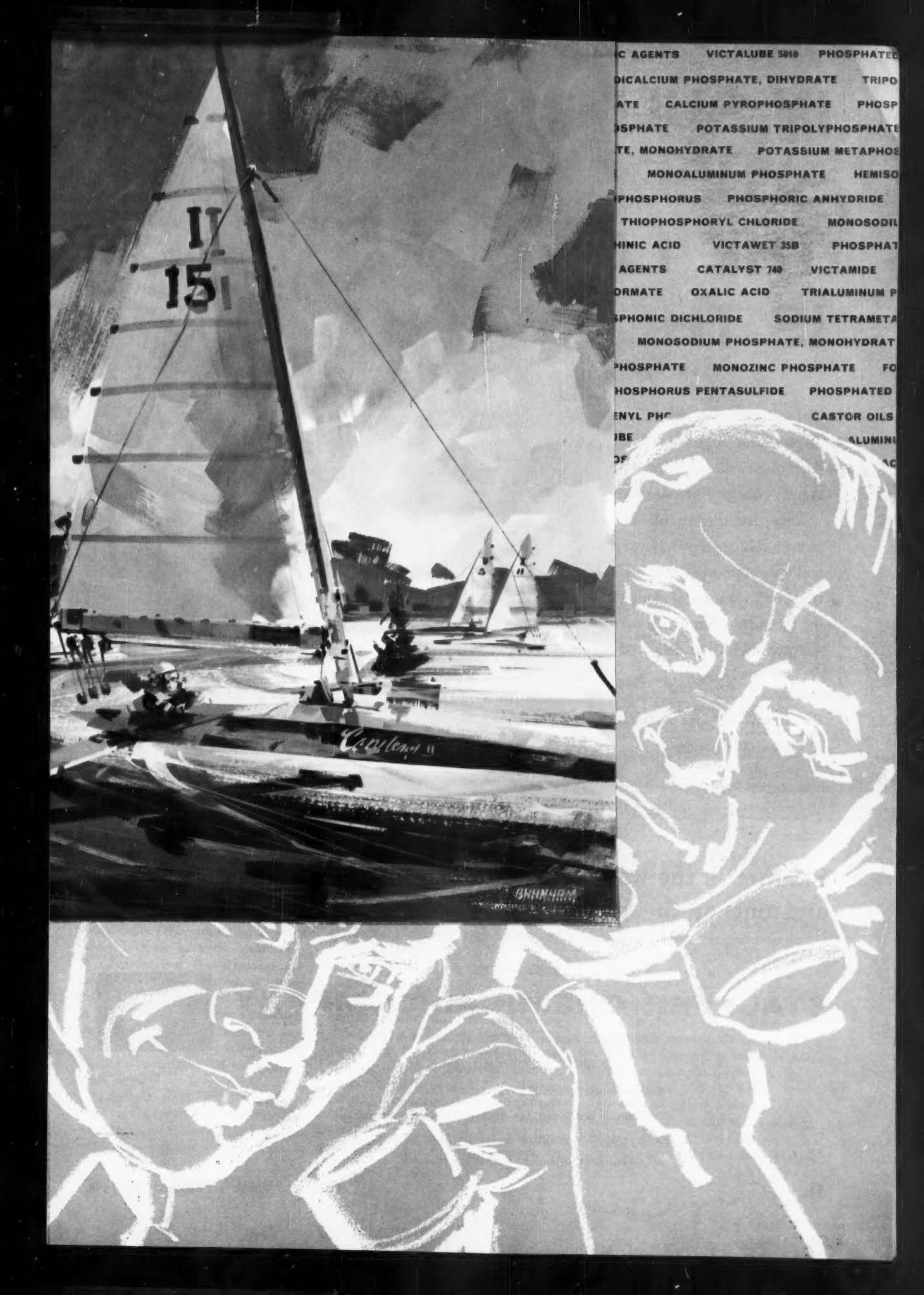


Leather takes a real beating before expert tanners achieve the "finish" people pay to see. And one of the long-time odds on favorites in the race to produce better leather; Victor formic acid.

Whether used in combination with other ingredients for deliming and pickling hides—or for dyeing and finishing leather products such as this ice-boater's suit—volatile, versatile Victor formic makes smoother sailing out of leather tanning operations.

Perhaps formic acid or some Victor chemical can be used to put the wind in the "sale" of one of *your* products. Of course, if you'd like help, the members of our technical service department will be glad to try a new tack and come up with a winning solution.

In either case, you can count on immediate action. Just fill in the coupon on the back page and mail it to: Victor Chemical Works, Box 271, Chicago 90. You will soon say, "It *pays* to see Victor."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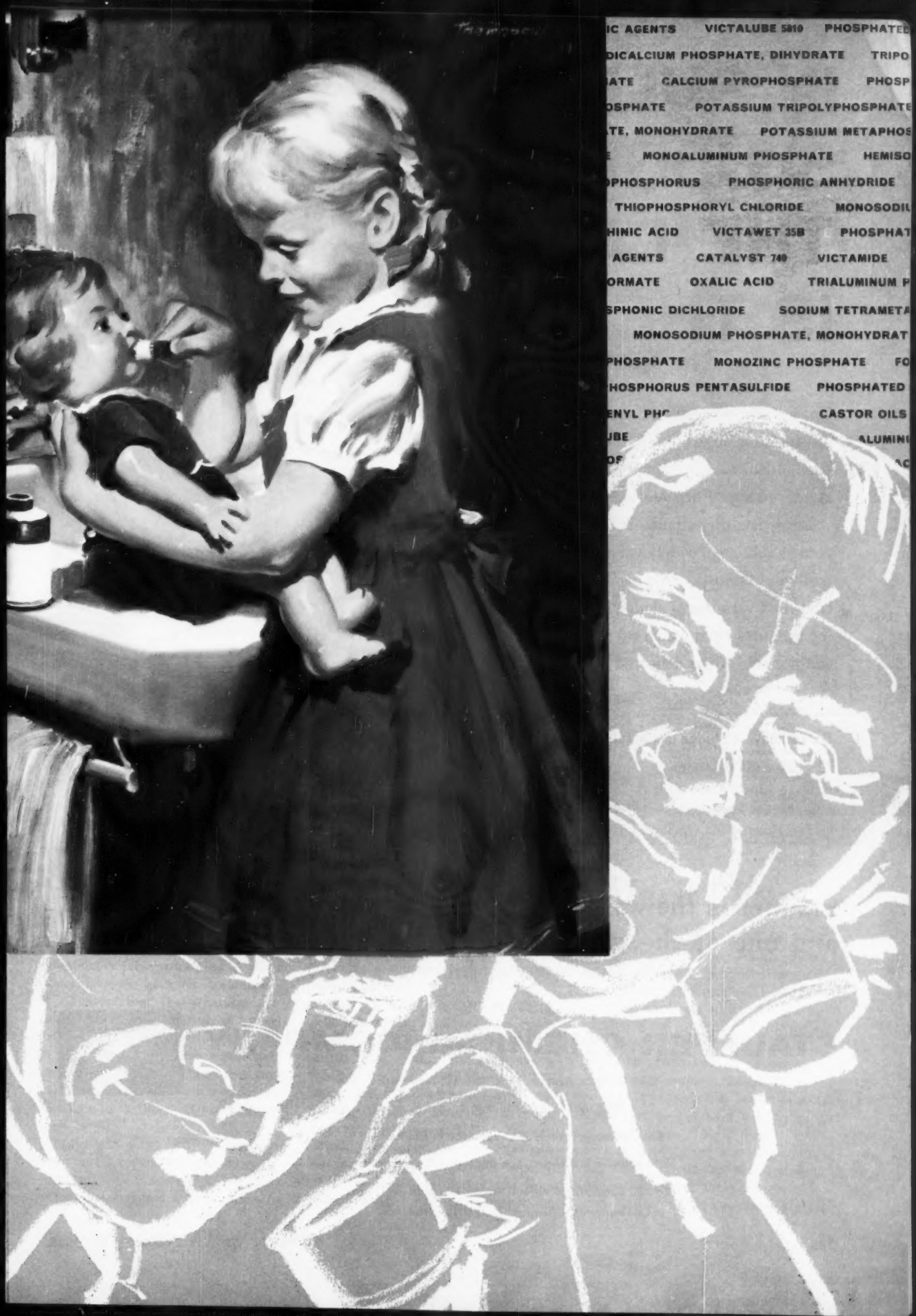
As a cleaning and polishing agent for dentifrices, Victor calcium phosphates are favorites among the leading brands. These special dentifrice grade phosphates, used in combination with other ingredients, are so effective that even the favorite doll enjoys having her teeth cleaned.

Dentifrice manufacturers have learned that they can depend on Victor quality for either dicalcium or tricalcium phosphates for toothpaste or powder. And they've known this for a long time. After all, Victor was the first producer of phosphates to receive the acceptance of the Council on Dental Therapeutics of the American Dental Association.

How about one of your favorite products? If it needs to be dolled up a bit, chances are that a Victor chemical, or the members of our technical service department can help. They enjoy working out a solution that either puts new life into an old favorite, or one that brings a new product to life.

So, whether you decide in favor of samples, technical data, or a confidential consultation, just fill in the coupon on the back page and mail it to: Victor Chemical Works, Box 271, Chicago 90. Like many others, you'll say, "It *pays* to see Victor."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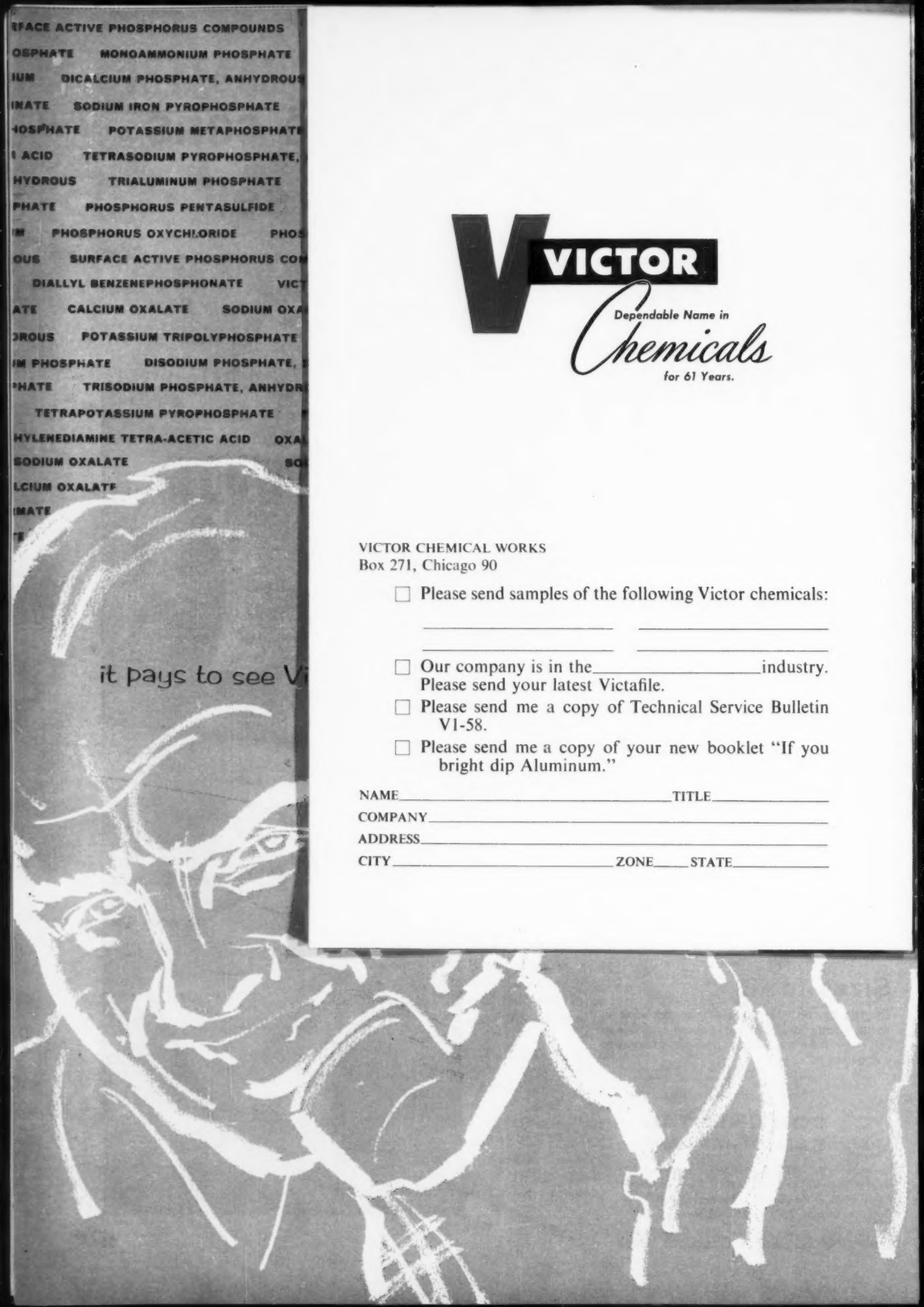
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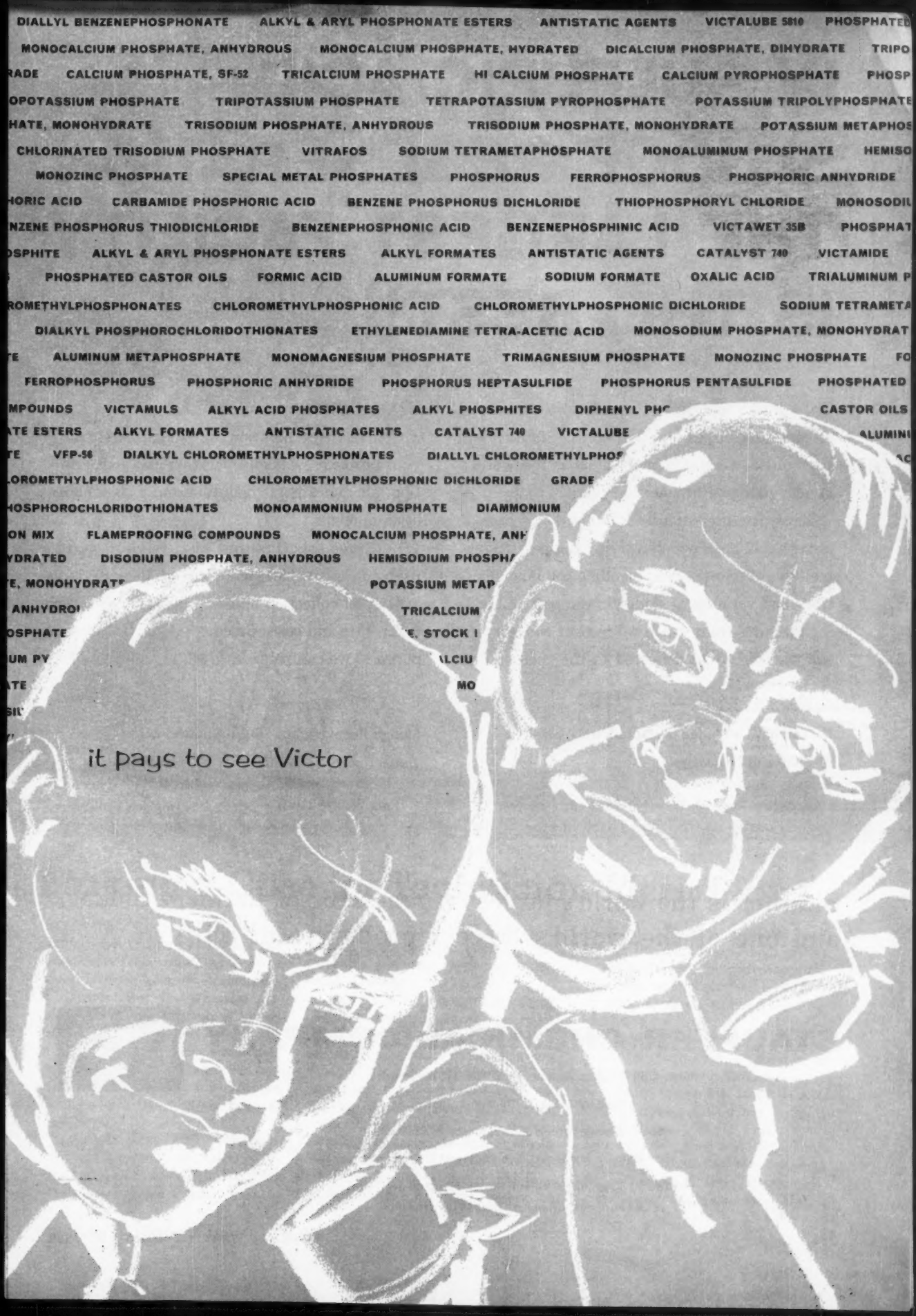
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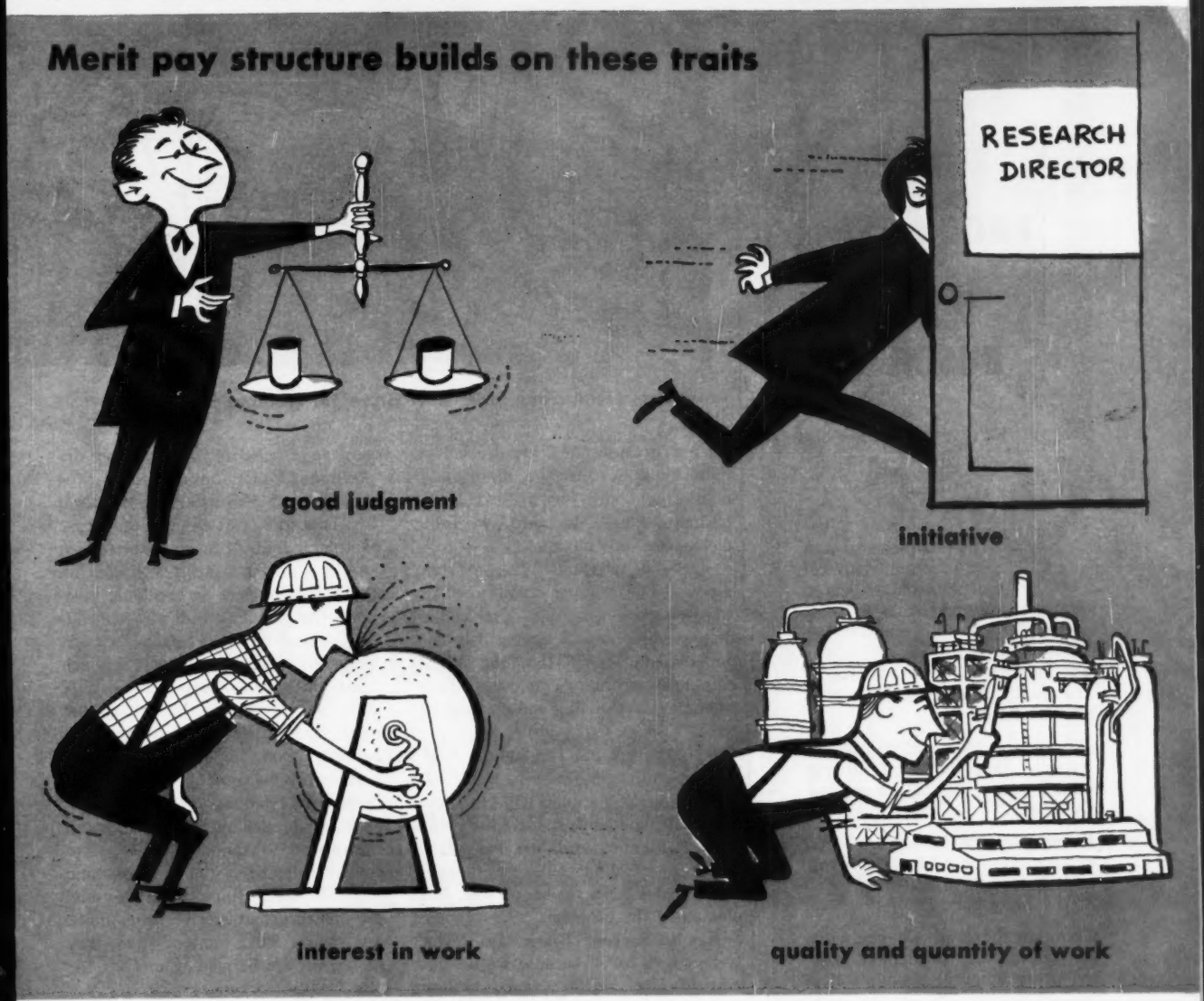

Making a Case for Technician Merit Plans

California Research Corp. was able to assess last week the first full year's experience with its novel merit salary increase plan for technicians. It discovers that the plan has permitted California Research to attract and keep better-qualified technicians; it has also improved the output and quality of work. It has, moreover, provided tips on how to sell incentive plans to work forces grown wary of such ideas.

Although most CPI companies have used a formal merit salary structure for their researchers, few have tried to extend this formal system to technicians. But CRC felt technicians have enough common characteristics to make a uniform system of merit raises possible.

New vs. Old: At CRC the merit salary structure replaced the more commonplace flat-rate system. In the merit plan, CRC set up a salary "range" for each job "level." The levels are called senior research assistant, research assistant, associate research assistant, and lab assistant. Within each range, the technician gets an increase, based upon his "merit."

In the flat-rate structure, the technician is paid according to his job level. All men at a particular level receive the same rate, cannot get an increase without a promotion. (Often, this flat-rate structure is spelled out in union contracts with the intent of protecting the technician. But it sometimes results in hindering the man who might get ahead.) Since it's harder to justify a promotion than a raise in pay, a large incentive factor is lost, men often lose out on pay raises.

The Payoff: Joseph Fratis, manager of organization and cost control for CRC, points up the following major benefits of the plan:

- Higher-caliber personnel are at-

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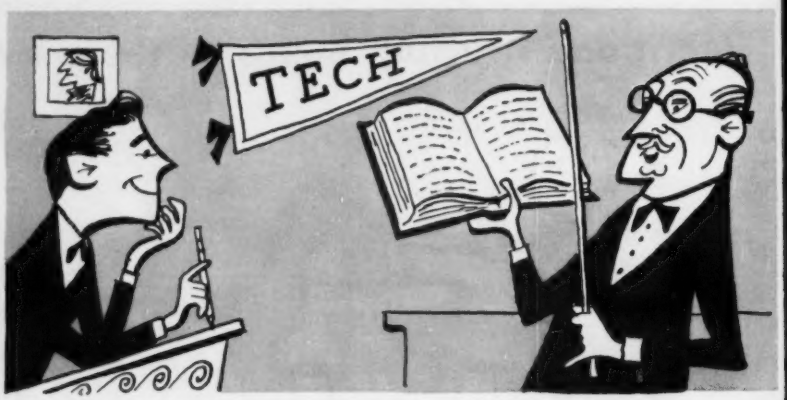

Ambitious technicians have new drive for gaining knowledge.

tracted because men are treated as individuals. For instance, more junior college graduates who are technically trained and are interested in being technicians are coming to CRC.

• Higher productivity from technicians. The company can now reward—with hard cash—the better-than-average man. Knowing they can get a salary hike if they put in the extra effort, these employees often produce better quality and quantity of work.

• Improved morale among technicians. Although Fratis feels it's too early to tell if the plan will cut turnover of personnel, it has definitely improved morale; and in one plant where top technicians were starting to seek new jobs, the merit plan has eliminated the problem.

Key to Success: Fratis says, "The system works well because we do the best job we can in evaluating our technicians, then incorporate this evaluation into our merit structure." Source of employee appeal: the top technician salary limit was boosted from $540 to $642/month.

Semiannual salary reviews are par at CRC, with the technician being rated on his judgment, initiative, interest in work, quality and quantity of work, effort in self-improvement (such as taking educational courses outside of the company). The most important evaluation of a technician is made by his immediate supervisor—a plan that has produced few gripes.

Union Attitudes Differ: A survey of industry by *CW* shows that a merit raise plan probably has its best chance of success in a nonunion house, where workers can take advantage of the income-boosting opportunities that result. But it is doubtful the plan would ever get to first base in a craft-union shop, where the union controls men's advancement—and is set up to keep such control. But for companies in a middle position—those dealing with an independent union—the plan stands a relatively good chance of success. Such firms are able to deal more directly with the employees in selling the merit plan. CRC has such an independent union.

Probably the most difficult job CPI industrial relations executives will have in broaching a formal merit raise plan to union officials is to convince them that the company, and not the union, must have the final say on who shall receive promotions, get raises. Most unions feel they should do the bargaining and set the rate for its workers.

Others Try It: Standard Oil of Indiana has a merit plan similar to CRC's; the former plan has been operating for one and a half years in three of the company's four laboratories. It has been definitely successful. But union opposition to Stanolind's package plan stalled it at the fourth lab. The company points out that the plan has "made all the difference in the world" in the amount and quality of the work produced, and in employee relations.

A good many CPI firms have a less-formal-type merit raise in operation. Ethyl Corp., for instance, has a plan with three levels of technicians and a salary range within each grouping. But Personnel Director Arthur Jennings admits that "a good portion of the raises still stem from lateral

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movement within the levels."

Armour Research Foundation also has a somewhat similar plan. Key point: seniority is excluded as a factor in salary increase determinations of technicians.

Some Reluctant: On the other extreme, one Midwest CPI firm anonymously claims it does not have a merit system, and does not intend to put one into effect. At this company, the salaries are reviewed for "fairness," but are not determined on the basis of "this or that merit."

Most firms that have not adopted a formal merit-increase plan are hindered by hard-to-shed, traditional methods of salary determination or are having a hard time convincing union officials of the value of such a plan. Now, however, a second look at merit plans may be worthwhile; there is more evidence that both employee and management can gain from the idea.

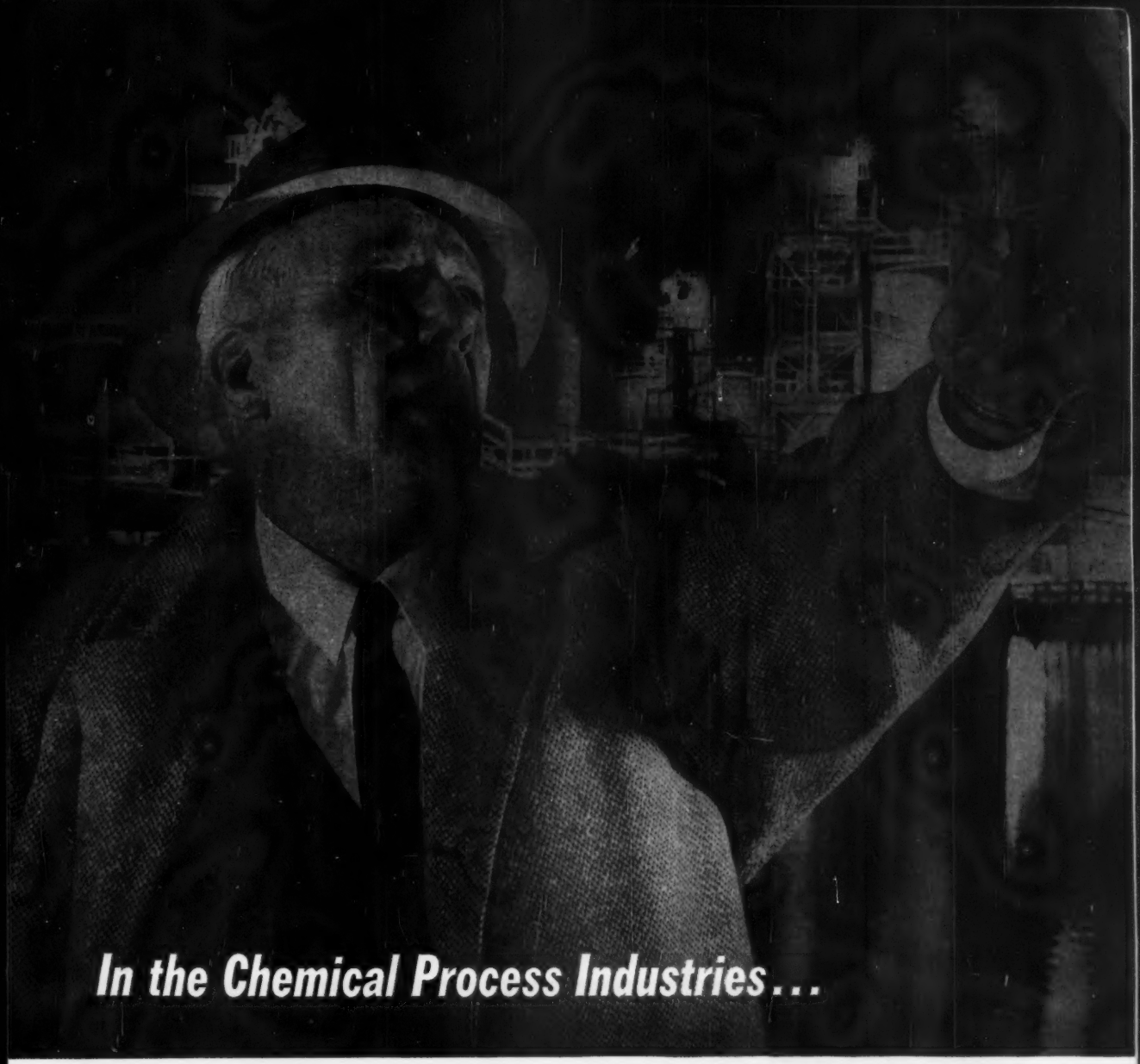
Resins Cool 'Hot' Milk

Particulars of a new chemical process to purify milk contaminated by radioactive iodine and strontium-90 were revealed this week by E. Glueckhauf, P. Cosslett and R. Watts, of Britain's Atomic Energy Authority.

Key agents: to remove iodine, an anion-exchange resin (such as Permutit's De-Acidite F) capable of treating about 500 times its volume of milk; to remove strontium, a cation-exchange bed.

Contaminated milk (radioactivity generally comes from fallout-contaminated grass consumed by cows) is first filtered through the resin (grain size: 30-60 mesh) at 0.4 to 30 cubic meters per minute, removing 99.6% of the radioactive iodine. Iodine removal does not affect bulk constituents of the milk, but more research is needed to determine if any trace constituents or vitamins are also removed. (Columns saturated with iodine are regenerated by rinsing first with water, then with concentrated salt solution containing hydrochloric acid and hydrogen peroxide, then again with water. A continuous purification technique, using semipermeable membranes, has also been worked out.)

Strontium is removed by a separate batch treatment. The cation exchanger is regenerated, using a mixture of calcium and sodium chloride.



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Technology
Newsletter

CHEMICAL WEEK
February 28, 1959

Better brush up on liquid hydrogen. You'll be hearing more about it soon.

The National Aeronautics and Space Agency is asking for a bid on a liquid hydrogen plant in the West to turn out 10,000 lbs./day. An operation of that size, including liquefaction, purification and storage units would probably cost about $6 million. Bids were originally scheduled to be opened Feb. 25. But last Thursday afternoon, interested parties were notified that the date had been moved back until March 11.

It is not known whether the site has been settled upon. But Henderson, Nev., is getting serious consideration. A strong possibility: gaseous hydrogen, by-product from Stauffer's caustic-chlorine plant there, would be the starting material.

Several chemical companies have been approached to submit bids. Stauffer and American Potash would logically be asked, because both have plants in the area and both have stakes in high-energy fuels and rocket propellents. But Linde and Air Products must be considered strong contenders because of their breadth of experience in low-temperature processing.

Neither Stauffer nor AP&CC has any background in this particular field, of course. But know-how is available from engineering firms such as Blaw-Knox. Moreover, a number of U.S. firms (American Air Liquide, American Messer, Uhde Corp.) have processes and know-how from their European parents.

In fact, one of the proposals now being readied involves an unnamed chemical company, the engineering company Ralph M. Parsons and Canadian Liquid Air. Parsons would probably handle design, engineering and construction; while the Canadian firm would be a technical consultant.

Present production of liquid hydrogen in the U.S. is pretty much a mystery. The Bureau of Mines is producing pilot amounts. Linde is planning a pilot operation at its labs in Tonawanda, N.Y. That unit will turn out a product high in para-hydrogen content, probably before the year is out.

But the biggest plant running is believed to be that built by Air Products in the Cape Canaveral area, capable of making 500,000 lbs./year. This is probably part of the still-secret Bear series (*CW Technology Newsletter, Nov. 30, '57*).

The whole idea of making and storing liquid hydrogen poses some formidable engineering problems. The Air Products plant is thought to use a liquid helium or similar approach. An expansion engine would be a more economical method and will undoubtedly be the basis for the NASA project. However, operating one at the required low temperatures

is a real feat. Right now, Messer in Germany is pilot-planting an expansion engine approach. Linde will probably use one for its pilot plant. In fact, the companies with experience in low-temperature work feel they can turn the trick.

Another difficulty comes in producing a product high in para-hydrogen, the more stable form. But in this area, they all have access to some fine work by the Bureau of Standards, which showed how ortho-hydrogen can be converted into para by means of a ferric oxide catalyst.

•

Another liquid gas is making news, this week—methane. The first methane load ever to be carried by sea arrived on the *Methane Pioneer* at Britain's Canvey Island, on the Thames estuary. Two thousand tons of liquid methane are being stored in 15,000-ton tanks at Canvey. It will be vaporized, piped to the Romford Works of the North Thames Gas Board for eventual mixture with refinery gases for consumer use.

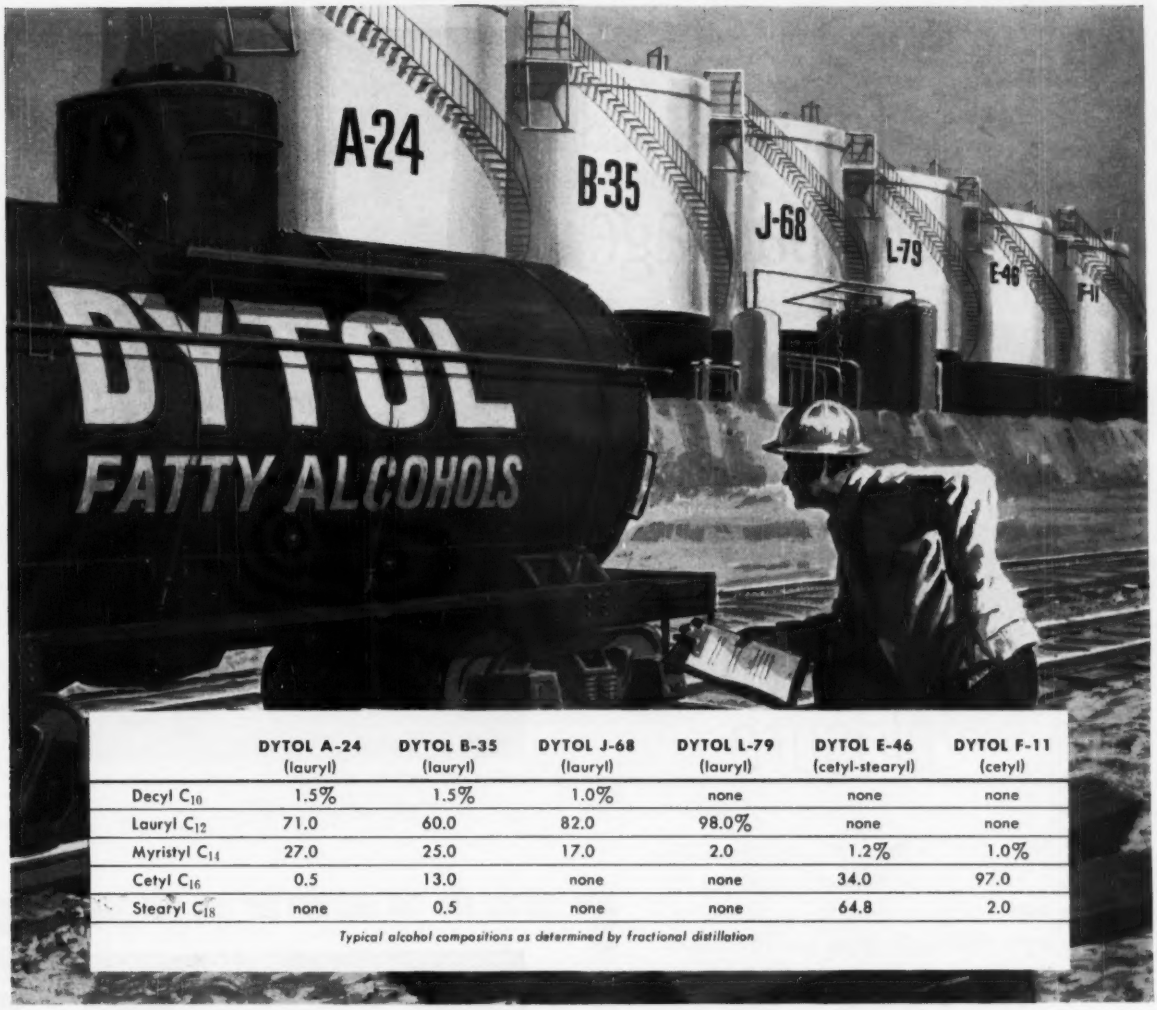
Three or four more trial voyages will be needed to establish the economic and technical practicality of shipping methane this way, a method first proposed some years ago (*CW, Oct. 22, '55, p. 89*).

Meanwhile, development of a French liquid methane ship begins next April at the Villeras test station close to Paris. Societe d'Etude du Transport et de la Valorisation des Gas Naturels du Sahara (SEGANS), organized by France's Air Liquide and four Sahara oil companies, is carrying out the project.

•

A plug for process heat reactors was introduced into the Congressional Joint Committee hearings by Michigan Chemical Corp.'s President Ted Marvin and its nuclear expert Dr. Adrian Gammill. MCC has been studying the economic and technical feasibility of nuclear-derived process steam for more than a year, feels it has a better chance than nuclear electric power to compete with fossil-fueled facilities. Reasons: process plants use three times as much steam as electric power generation; estimated cost of generating steam in a nuclear-fueled plant is only slightly higher than that of conventional plants, while nuclear electric power costs are several times higher.

The major roadblocks, as MCC sees them, are (1) the lack of demonstrated costs for nuclear-generated steam, and (2) the high capital costs of such a plant (estimated to be about double that of an efficient new fossil-fueled plant). To solve the first problem, MCC suggested that AEC modify its proposed third-round demonstration program to include process steam reactor concepts, either by building one on a chemical plant site and selling the steam to the company, or by making up the difference in capital costs to a chemical company that would build its own nuclear steam plant. MCC indicated its willingness to participate in such development program, feels that the high cost of fossil fuels and typical steam load requirements at its St. Louis, Mich., plant would provide a good test of such an installation.



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Myristyl C_{14}	27.0	25.0	17.0	2.0	1.2%	1.0%
Cetyl C_{16}	0.5	13.0	none	none	34.0	97.0
Stearyl C_{18}	none	0.5	none	none	64.8	2.0

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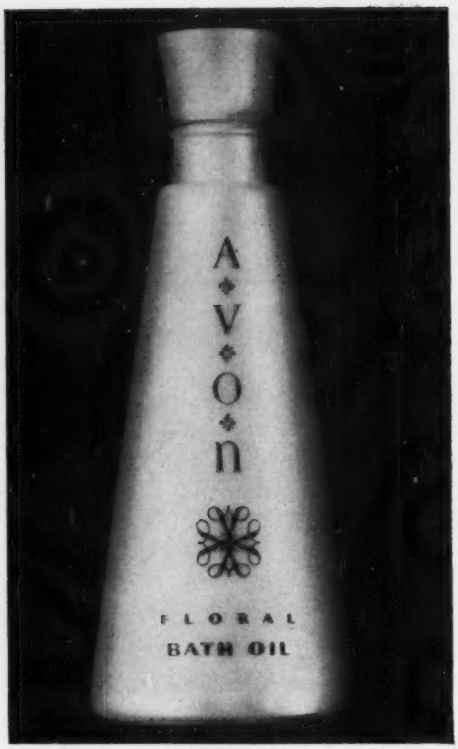

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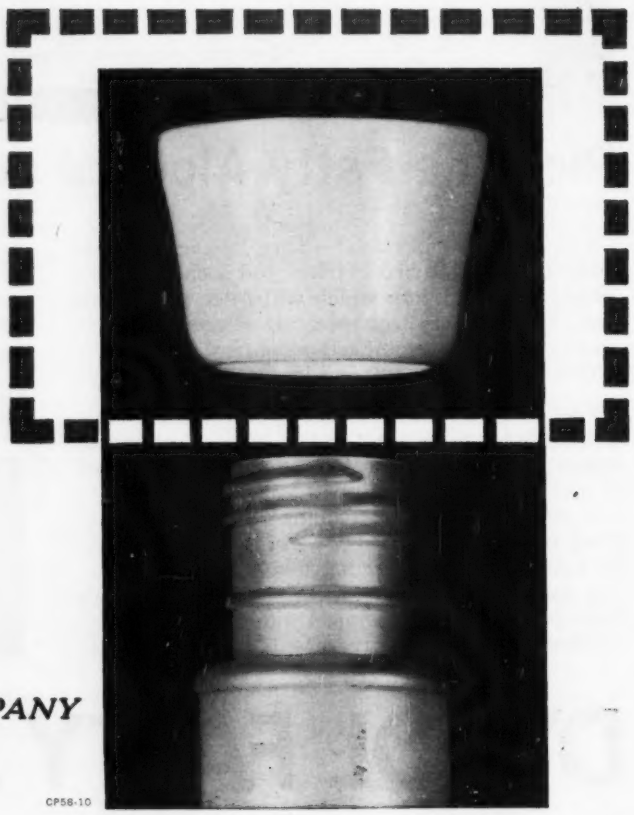

CP58-10

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Credit Men Ponder a Question of Ethics

Are These Practices Ethical?	No, say . .
1. Credit agency promises to show financial statement only in confidence, then publishes figures in circular letter to important subscribers.	99%
2. Fail to answer reference requests from agency-reporting-service.	90
3. Allow favored high-volume accounts to discount more than a month late.	90
4. Permit inexperienced clerks to fill out trade inquiry forms without review.	86
5. Banker reports only favorable data about accounts.	81
6. Suggest that delinquent accounts pay up before credit man is obliged to report them at next creditors' meeting.	81
7. Mark records to let proximal-paying customers remit late but still claim discount.	80
8. Show sales department creditor group's meeting records and membership lists.	79
9. Inquire about credit relationships of key competitors before visiting customers.	78
10. Select names from creditors' meeting records for use as sales prospects.	66
11. Banker fails to tell credit man that account was recently subject of large tax lien.	63
12. Extend credit to customer just discharged from bankruptcy if he pays full debt – even those obligations relieved by bankruptcy settlement.	56
13. Demand customer return unpaid-for shipments under threat of suit after learning at creditors' meeting that customer is past due with many suppliers.	51

A Code of Conduct for Credit Managers

What represents an unethical credit practice? This week, chemical credit executives have gone on record with an answer. A new survey by the National Chemical Credit Assn. (New York) stamps as "unethical" about a dozen practices in areas that relate to sales, collections, credit agencies and banks.

Concern about credit ethics has become especially vital to industry as a result of the recent recession and ever-sharpening competition. Severe pressure to liberalize extension of credit has increased the likelihood of abuses.

The survey aims at nipping unethical practices before they develop into major industry problems. By clearly labeling certain practices as "unethical," credit men hope to discourage them.

Fine Line: The balance between sales departments' demands, personal standards, industry practice and requirements of the law often result in a fine line between ethical and unethical practice. Look at the ethical elements in sales-credit relationships:

Chemical credit executives emphatically (78%) term "inquiry about credit relationships of key competitors before visiting customers" as unethical. Two factors say credit personnel, are involved. It's obviously unethical, they feel, to use such information for sales promotion purposes by arranging, say, for more liberal payment.

Just as important, however, is the unethicalness and illegality stemming from "mutual agreement" between credit men on credit practice relative to a specific account. Credit executives all condemn anything that smacks of "agreement," brand such practice as highly unethical.

Yet, many believe that such inquiries are ethical if the information is used for constructive purposes—e.g., protecting the creditor's investment in accounts receiveable, and if no "agreements" are made.

Distribution of credit information to sales managers and salesmen is another gambit that credit managers eschew *(Items 8 and 10 in table)*. Mainly, they object to such information being used for sales promotion, or disclosure of data that was gained in strict confidence. Some credit departments have no choice in the matter; sales departments sometimes insist on seeing creditors' meeting records, collection agency reports. In such

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Blunging Clay Body Speeded 1250% (1-J)

In a dinnerware plant, 500 gallon batches are now blunged via Cowles in ¾ hrs. Operation used to take 6 hours. And the Cowles in combination with the Morehouse Mill completes job of both blunging and milling in 1 hr. vs. old method with ball mill that previously took 8-24 hrs.

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cases, chemical credit men prefer to restrict distribution of the data to sales managers, depend upon their discretion in customer relationships.

Favoritism also draws credit department ire. Take the case (*Item 7*) in which a credit manager marks his records to give prompt-payment discounts to customers paying late—beyond the discount period—but following a regular monthly pattern in so doing.* Some 80% feel that this isn't cricket.

It tends, they say, to extend to tardy customers the advantages earned by prompt-paying accounts. Moreover, it demands costly recordkeeping. In cases where no formal notation is made on records (*Item 3*), credit men are even more emphatic. About 90% object to allowing high-volume accounts to discount more than a month late.

Collection Pressures: Two serious problems of ethics arise from group meetings of creditors *(Items 6 and 13)*. Most frowned upon (81%) is the practice of gently threatening a delinquent account (one week in advance of a scheduled meeting), suggesting that he would be "better off" if he pays past-due debts before the credit man is obliged to report him.

Opinion splits sharply, however, on the wisdom of learning (from a creditors' meeting) that a customer is past due with many suppliers, then demanding that the account return the material that was purchased or face suit. Some 49% believe the idea is ethical. Most of those who object to the practice believe it is poor business rather than unethical.

A moot point arises in this typical situation: the credit man gets an order from a customer just discharged from bankruptcy—the latter has paid 20% of debts. The credit man will extend credit only if the account pays the 80% remaining of the old debt, despite the account's release from this portion of the debt. More than half (56%) of the 100 survey respondents say this is unethical. But many feel that if the account is a "criticized bankrupt"—i.e., believed to be dishonest—it is sometimes desirable to encourage him to settle up old debts.

Bank-Agency Relations: Heaviest vote (99%) of "unethical practice" in the survey came in reply to Item 1: agency reporter promises to keep financial statement in confidence—then publishes data in circular letter to top subscribers.

Credit men also berate their colleagues for the (*Item 2*) failure to answer inquiries from agencies they subscribe to. Although they face hundreds of such requests in a month, most indicate that credit experience data should be shared with agencies employed by the credit man.

Bankers that report only favorable information about their accounts (*Items 5 and 11*) leave themselves open to criticism on ethical grounds. There's widespread feeling in credit circles that bankers have an obligation to avoid excessive emphasis on favorable information. Few (20%) credit managers, however, consider checkoff form answers, used by some banks, to be unethical.

Trade Reporting: Only 25% of credit men surveyed say it's unethical to report customers as paying promptly when special payment arrangements have been negotiated. But the problem is much more involved than the response indicates. This question refers to cases in which the special arrangements are unexplained in the report and the account is reported as prompt.

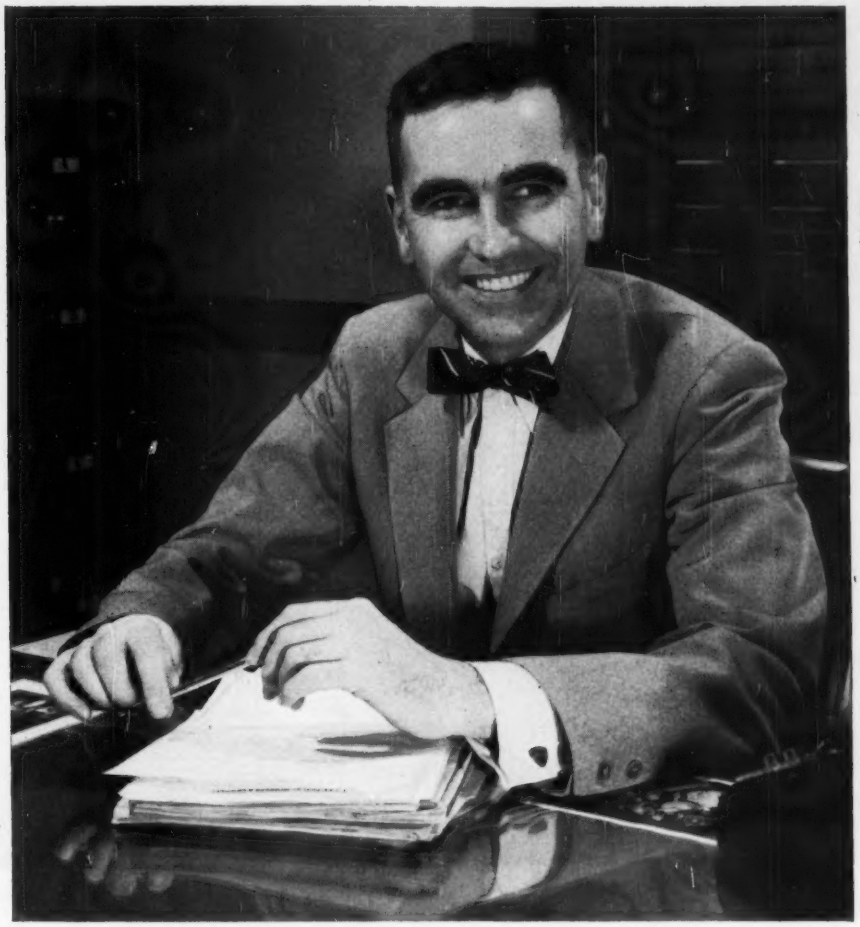
Credit executives, *CW* finds, are extremely reluctant to describe accounts in that fashion, although they believe it is ethical. Here's why:

Adoption of such description would encourage many slow-paying accounts to ask for special agreement-prompt payment notation. "No self-respecting credit department," says one veteran credit man, "wants that or will do that." And the practice would greatly complicate recordkeeping. In exceptional cases, say credit men, the practice can be used, but the special arrangements should be clearly indicated.

Allowing inexperienced clerks to fill out trade inquiry forms also merited substantial criticism (*Item 4*). Main reason: confidential information might be inadvertently disclosed or inaccurately reported.

For many credit managers, the survey results are welcome reassurance that the chemical industry is not diluting its unethical standards. They know that customers are keenly sensitive about credit relations and standings. High ethical standards make good business sense.

*This can arise in proximal-payment bookkeeping. Here, a customer pays all or a portion of his bill the same time each month—e.g., the 10th day after the end of the month.



"In the manufacture of fine papers," Finch, Pruyn's Harry E. Earl says . . .

"We select suppliers whose standard of quality is as high as ours"

"We are a closely integrated organization," states Harry E. Earl, director of purchasing and traffic for Finch, Pruyn & Company, Inc., Glens Falls, New York.

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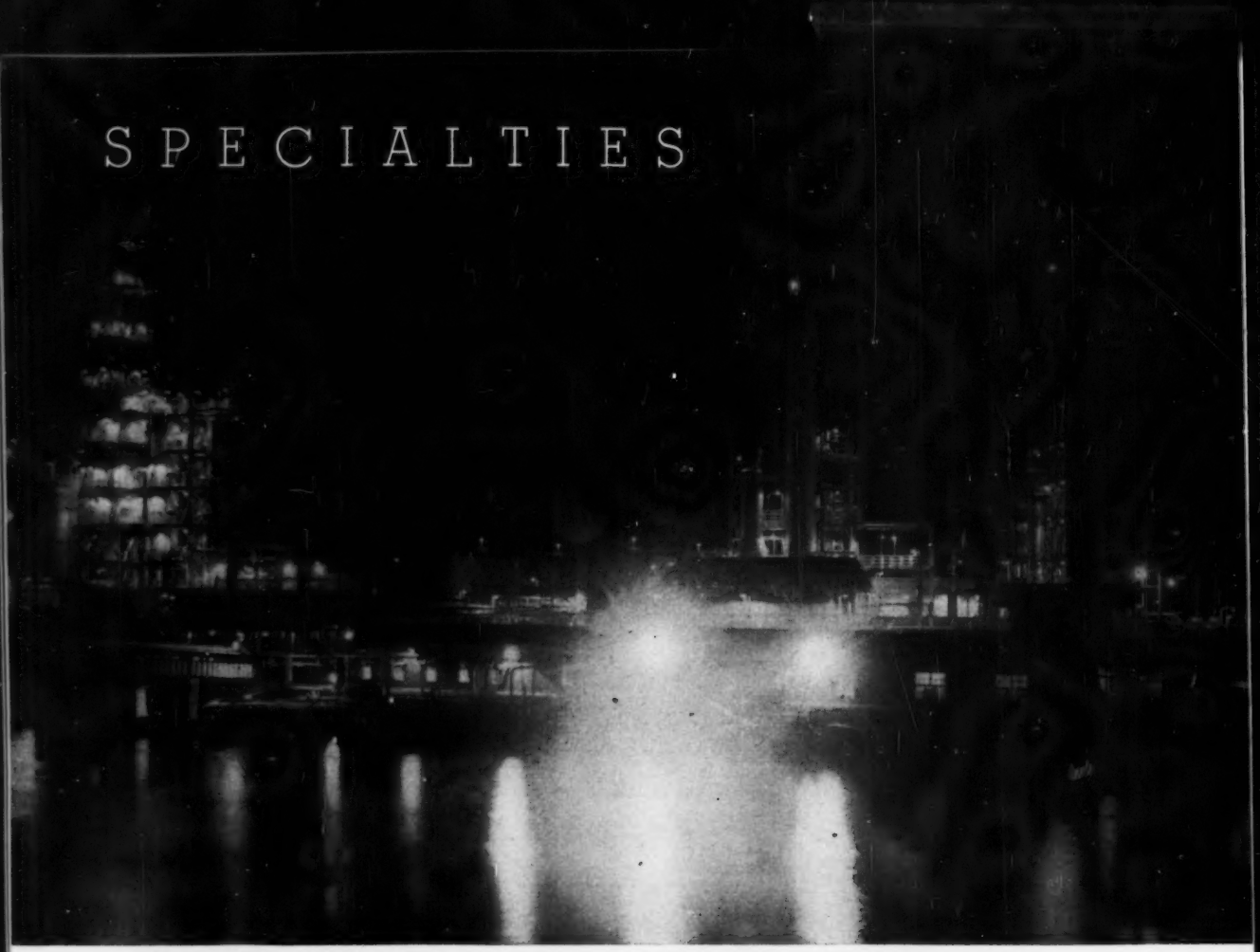

Nippon Oil's 32,000-bbls./day oil refinery near Yokohama, Japan, is exporter Mitsui's source of U.S.-

Japanese Wax Maker Finds Sales

Japan's first large shipment of paraffin wax will be unloaded this week at San Francisco's docks. It marks the first move on the part of Mitsui and Co. Ltd., Japan's resurgent chemical giant, to cash in on the U.S.'s 1-billion-lbs./year wax market for the paper and packaging industry.

Warwick Wax Co., Inc., subsidiary of Sun Chemical Corp., will be the U.S. distributor of the Japanese paraffin. Its objective is to sell about 6 million lbs. of the wax this year.

Under the new Warwick-Mitsui arrangement, Warwick will begin distributing the paraffin on the West Coast. Demand there for the material is greater than in other parts of the country, according to Maurycy Bloch, head of Warwick Wax. West Coast crudes generally do not yield lower-melting-point paraffins. So, the biggest demand will be for paraffins in the 125-130 F range.

Four grades of the full-refined Japanese paraffin will go into initial distribution, all under the Nissekiwax tradename. Warwick will handle Mitsui paraffins in the 125-130, 130-135, 135-140 and 140-143 F, ASTM melting-point ranges. Price will be competitive with U.S.-made paraffins—about 8-9¢/lb. Quality of the material, says Warwick, is identical to U.S.-made paraffins in most respects—superior in some cases, i.e., in anti-blocking characteristics.

How Much: To date, the amount of paraffin wax imported by U.S. firms has been very small, particularly from Japanese companies. At least one other company, S. Henle Inc., a U.S. wax importer and exporter, is bringing in Japanese wax. But according to a Henle spokesman, the amount of Japanese paraffin imports has been insignificant—much less than 1 million lbs. over the last year. Henle's Japanese paraffin, available in two ASTM melting-point grades (125-127 and 130-133 F), is sold to jobbers for about 8¢/lb.; they, in turn, market it primarily to polish makers.

Although U.S. imports of the Japanese material are likely to increase this year, the total amount imported isn't likely to seriously affect the U.S. paraffin business. Japan's total export capacity is estimated at 24 million lbs./year. Half this amount is currently going to countries other than the U.S.—mainly South America. That leaves only 10 million lbs. available for U.S. import, a far cry from the 900 million lbs. sold in the U.S. last year. But U.S. imports have been steadily rising in recent years.

The Micro Lure: Japan doesn't now have the potential for supplying large quantities of paraffin to the U.S. For one thing, Japan has no domestic petroleum, and must import crude from Sumatra. Despite this handicap, Japan may someday be a big factor in supplying U.S. processors with another

Japanese Paraffin Wax Picture

(million pounds/year)

	Capacity	Output (estimated)	Domestic Sale
Nihon Sekiyun Co.	52.9	23.8	6.6
Nihon Seire Co.	26.5	22.5	18.5
Shell Oil Co.	10.5	10.3	9.3
Daikyo Co.	6.6	2.6	2.6
Nippon Kegye Co.	1.2	0.8	0.8
Mitsubishi Sekiyun Co.	2.0	1.3	1.2
Standard Vacuum Co.	5.3	negligible	negligible
Taniguchi Sekiyun Co.	2.0	1.3	0.7
Total	107.00	62.6	39.7

bound paraffin wax. This year's export goal: 6 million lbs. of wax to U.S. paper, packaging industry.

Sparkle in Supplying U.S. Market

important petroleum wax, the microcrystalline* type. Certainly, U.S. buyers crave more supplies. Warwick Wax is already negotiating with Mitsui (and Nippon Oil Co., for which Mitsui is export agent) on microcrystalline wax production. According to Warwick, Nippon has the necessary equipment to turn out the microwax, but it will be at least two years before production gets under way. Nippon's Sumatra crudes reportedly contain high percentages of both paraffins and microwaxes.

U.S. petroleum companies gear their output of microwax to heavy-lube-oil production, but since demand for heavy lube oil isn't growing as fast as demand for by-product microwax, there's likely to be a significant microwax shortage. Although U.S. oil firms (e.g., Shell and Sun) are investing more money, boosting micro output, future demand for microwax is still likely to outweigh supply.

As in the case of imports of paraffin wax, microwax imports have grown steadily over the past few years. Currently about 1 million lbs./-month of microwax is coming into the U.S., mainly from Mexico and South America. As demand for microwax in the paper and packaging industries increases (especially in laminating and waxed-paper uses), imports of these waxes seem certain to rise.

Demand vs. Supply: This seems particularly true, in view of the serious shortage of microwax that most in the industry foresee. There is, however, conflicting opinion as to the extent. The paraffin supply setup is different: U.S. wax importers and exporters tell *CW* they don't foresee any paraffin shortage, claim that supply instead will greatly exceed demand. Reason, they say, is that polyethylene will move strongly into the packaging industry—which now eats up 75% of total wax production.

Milk Market: Milk cartons, by far the biggest single market for paraffin wax (60% of total production), will also doubtless be a target for polyethylene makers. Polyethylene milk cartons are already being sold and, if these capture the public's fancy, they will be a big new market for the "synthetic wax."

Although polyethylene appears to be formidable competition for the milk-carton wax business, it will probably be at least five years before milk-container firms make the big switch. In the meantime, the ubiquitous Mitsui, decartelized after World War II and now being gently pulled together again, is likely to find a ready U.S. market, first for its paraffin wax, then for its microwax.

*Both paraffin and microcrystalline waxes are separated from crude petroleum, but the separation processes and the resulting products are different. Microcrystalline waxes are characterized by microcrystalline structure, higher molecular weight, higher melting points, higher viscosity and a higher percentage of oil content than that of paraffin wax.

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Market Newsletter

CHEMICAL WEEK
February 28, 1959

Drastic curtailment of zirconium production at Wah Chang's plant at Albany, Ore., is viewed by some metal experts as evidence that the zirconium business is fast approaching the same oversupply impasse that now plagues the titanium business. But it's not so, yet. Wah Chang's production cutback is a special case, results from nonrenewal of the one-year "stopgap" contract with the U.S. Atomic Energy Commission. The short-term contract was drawn up when other producers were having production troubles, couldn't provide as much metal as AEC wanted.

How long the firm's zirconium output will be reduced depends largely on what AEC decides to do about new contracts, but chances are that production at Albany will be slow for the next two years. Other producers—Carborundum, Mallory-Sharon, Columbia National—have long-term AEC contracts and will continue production for several more years.

Meanwhile, production of hafnium, tantalum and columbium continues on a 24-hours/day schedule at the Wah Chang plant, according to the firm's spokesmen.

•

A switch in water fluoridation methods may boost fluorspar demand at the expense of fluoride salts customarily used to treat water. A new device, developed some time ago and now getting large-scale tests from the U.S. Public Health Service uses mineral fluorspar, reportedly reduces per capita annual cost of fluoridation from 10¢ to 3¢/year.

U.S. fluorspar demand would jump an estimated 10% (about 65,000 tons/year) if every community switched to the new process. One drawback: many communities won't change, because fluorspar can't be used unless alum is already being added to water.

Potential loss of some municipal markets isn't worrying fluoride producers much, because water fluoridation accounts for only a small part of their total fluoride sales. Moreover, the water fluoridation market isn't growing as fast as hoped. Last year, only 131 communities started fluoridation programs, compared with 378 (the peak year) in '53. In fact, the steadily diminishing number of converts prompted Secretary of Health Flemming, a few weeks ago, to call for a "militant majority" to oppose the "militant minority" that blocks water fluoridation in many cities.

•

The Paley Report contributed to current overabundance of many metals (e.g., copper, lead, zinc) and, in effect, stultified its own prophetic reputation, according to geologist Evan Just, one of several experts who last week criticized the controversial government forecast (*see p. 62*). Explains Just: "The adverse attitude that has been so evident among nonferrous mining people did not prevent them from using the report's general portrayal of impending scarcity to justify large expenditures for development of new mines. Expansions thus justified, and supported by easy credit

from government agencies, have had much to do with the present abundance of metals."

•

U.S. cobalt producers have reason to intensify their claims for government protection because of a 25¢/lb. price cut last fortnight, which brought imported metal down to $1.75/lb. U.S. producers are having a tough time meeting this price, but they would have a tougher time filling domestic requirements, even if there weren't foreign competition. (In the first nine months of '58, U.S. cobalt output amounted to about 2.65 million lbs., compared with 10.8 million lbs. imported.)

But U.S. producers have long complained that U.S. production is limited by pressure of low-priced imported cobalt, which "threatens the very existence of the U.S. industry." Domestic producers hope that relief in some form will be provided, presumably by high tariffs or import quotas; possibly by a government stockpile program.

The current price slash was initiated by sellers of cobalt from the Belgian Congo. Reason for the cut: production of copper—hence cobalt—will be stepped up considerably in the Congo in the next few years. Lower prices, it's hoped, will spur greater use of the metal and its derivatives.

Substantial price cuts on most cobalt chemicals quickly followed the metal price cut. Some examples: cobalt acetate was reduced 6¢/lb., to $1.04/lb. in lots of 100 lbs. or more; cobalt carbonate was reduced 12¢, to $1.45/lb.; the nitrate was shaved 5¢, to 85¢/lb.

•

Mexican sulfur production last month dropped off sharply. Total output in January was 106,266 long tons—9,000 tons less than in December. Major producer Azufrera Panamerican cut back some 8,000 l.t.; Gulf Sulphur's affiliate, Cia. de Azufre Veracruz, about 1,000 tons.

Behind the cutback: slack demand dropped Mexico's sulfur exports 40,000 tons and producers are trying to keep production in step with demand.

SELECTED PRICE CHANGES—WEEK ENDING FEBRUARY 23, 1959

	Change	New Price
UP		
Potassium stannate, dms., frt. alld.	$0.005	$0.789
Sodium stannate, dms., wks., frt. alld. E.	0.006	0.648
DOWN		
Cobalt acetate, dms., dlvd.	$0.06	$1.04
Cobalt carbonate, powd., bags., dlvd.	0.12	1.45
Cobalt chloride, dms., dlvd.	0.06	0.99
Cobalt hydrate, dms., dlvd.	0.15	2.05
Cobalt nitrate, bbls., dlvd.	0.05	0.85

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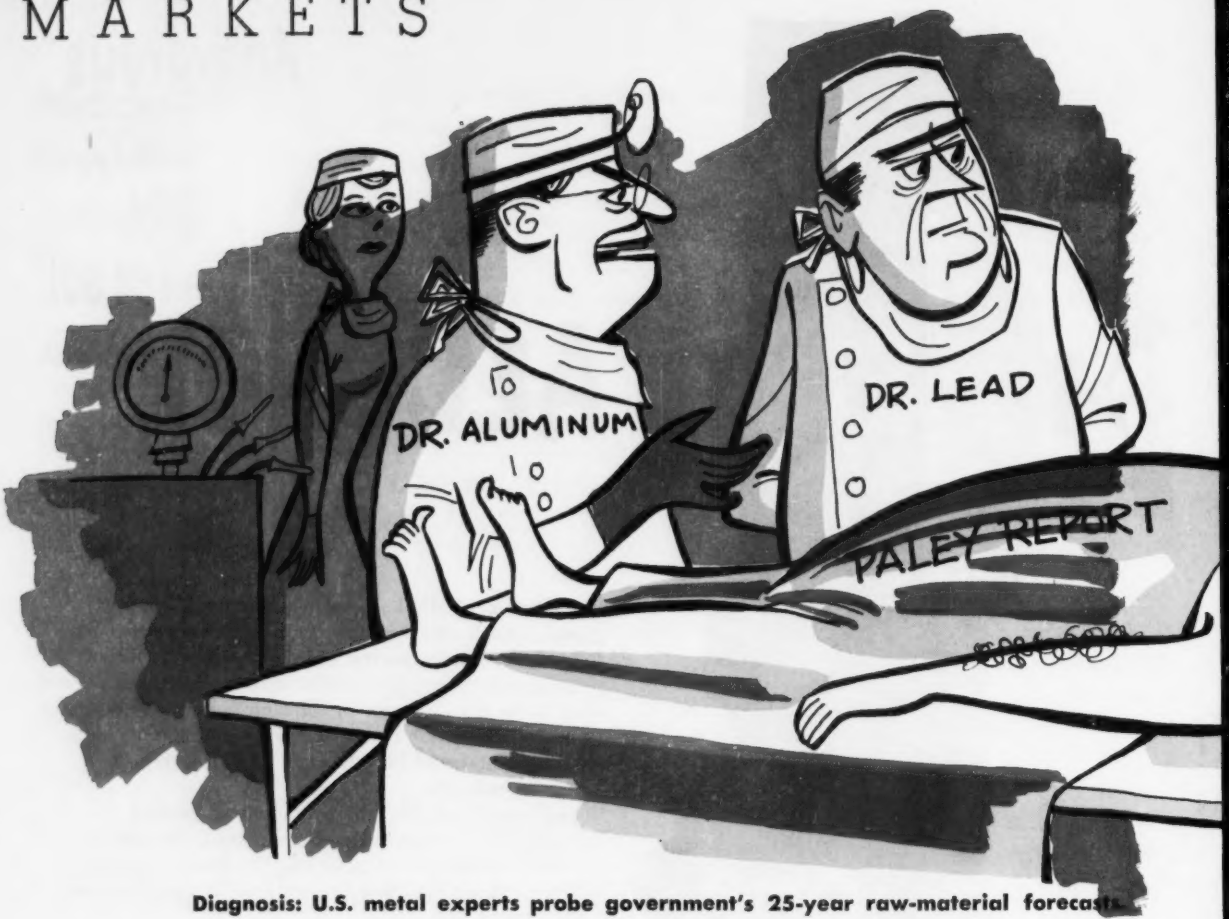


Diagnosis: U.S. metal experts probe government's 25-year raw-material forecasts

Re-examination of Paley Prophesies

Last week, U.S. industrial and government experts took a critical look at the so-called Paley Report which several years ago spelled out the nation's 25-year requirements for raw materials, chemical commodities and energy from base year 1950. Cogent observations by the critics — who focused attention primarily on the U.S. metal industry — point up problems faced by CPI planners utilizing the report as the basis for long-range supply/demand forecasting.

Occasion for the discussion was the annual meeting of the American Institute of Mining, Metallurgical and Petroleum Engineers in San Francisco.

One-third of the 25-year forecast (prepared by the President's Materials Policy Commission, headed by William S. Paley) has run its course. By now, market analysts are, of course, tempted to evaluate the commission's predictions in light of actual developments. (In fact, some preliminary comparisons relating to chemical commodities were made two years ago; *see CW Market Newsletter, June 29, '57.*)

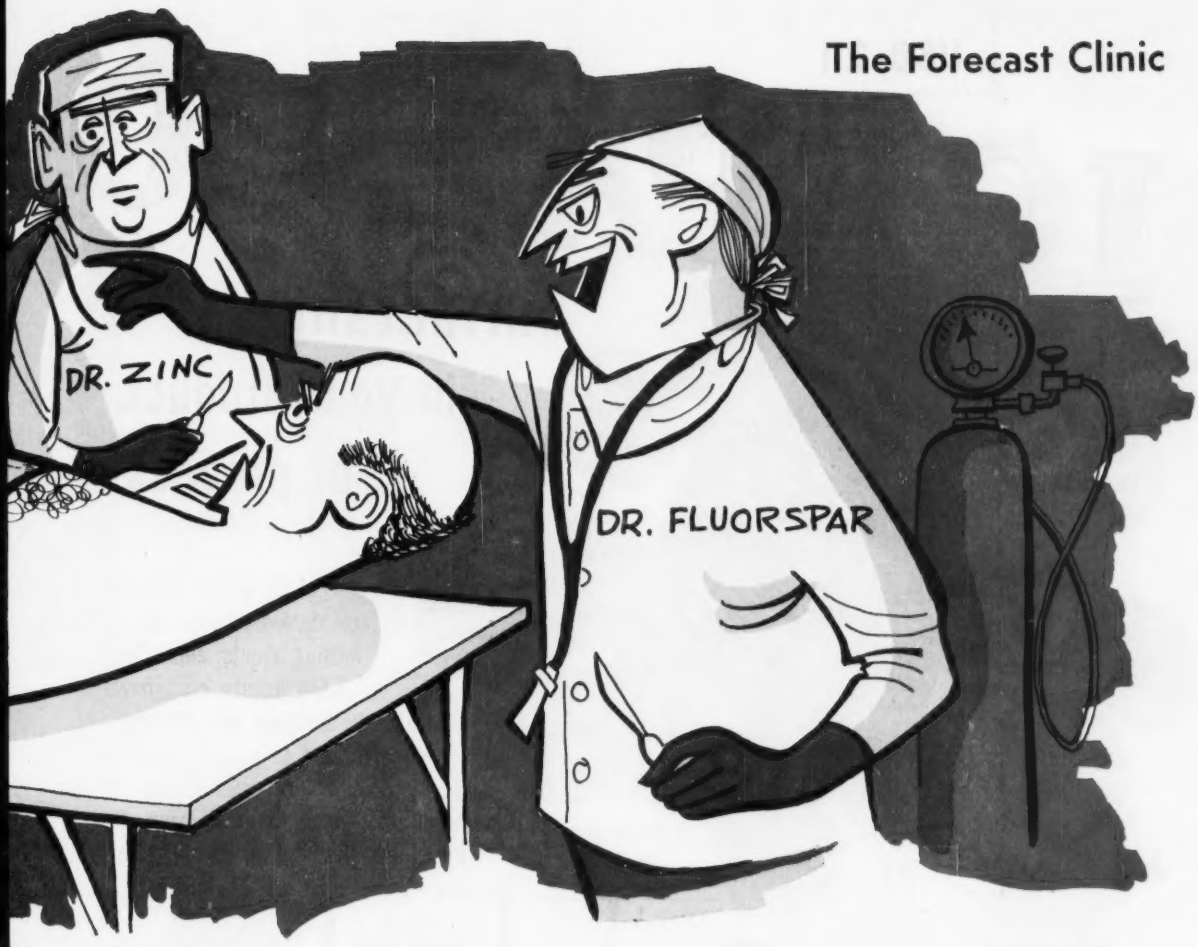
Consensus of the validity of most such critical comparisons is that many interpretations and criticisms of the Paley study unfortunately result from serious misconceptions of the purpose and objectives of the commission.

For example, S. G. Laskey of the U.S. Dept. of Interior states emphatically that the Paley Report "is almost always misquoted as saying that consumption and supply of some commodity will be thus and so by 1975." The report's target year of '75, Laskey avers, refers to the decade 1970-80, and the Paley projections are expected to indicate only "the plausible shape of things to come in that decade" and "to give only a rough measure."

Right Answers, Wrong Reasons? In general, Laskey says, the Paley record as of now seems good. But, he added, "skeptics will snort that, although the answer came out right, it did so for the wrong reasons." One argument supporting that reasoning: the Paley Commission underestimated population growth.

Basing comparisons on actual '57 demand, Laskey points out, however, that of 17 mineral items for which demand projections were made, consumption of nine items fell within 10% of the commission's figure (as derived from straight-line projection from '50 to '75). If a 20% margin of error is considered reasonable, the forecast was good on a total of 14 items—including lead and zinc.

The commission was "way off" on



DRAWING BY COOGAN

Finds Metals Outgain '52 Guesses

only two items: '57 consumption of cobalt was 50% lower than the Paley estimate; use of aluminum was 100% higher than expected.

Aluminum Leaps: The U.S. aluminum picture, as framed by the Paley Report, got a thorough dusting by Walter Rice, president of Reynolds Mining. He said analysts foresaw only a 4.5-tons/year demand for aluminum in '75, whereas 10 million tons/year has been forecast for '75 by Reynolds (based on a comprehensive consuming-industry study and assumption that U.S. economy will double between now and '75).

But the Paley Report accurately pinpointed the major areas of growth in aluminum consumption, i.e., building and construction, transportation, electrical industry. The Reynolds study now indicates these likely demand increases: electrical uses, from 250,000 tons in '55 to more than 1 million tons in '75; transportation, 400,000 tons in '55, 3 million tons in '75; architecture and construction, 500,000 tons now, 2 million tons in '75.

Rice summarized performances of other light metals: consumption of magnesium increased from 26,000 tons in '50 to 64,000 in '56—an annual growth rate of 14%, compared with 6-16% expected by Paley. Titanium sponge production soared 80%, from 500 tons in '51 to 12,000 tons in '56, but estimated '58 consumption is a relatively low 3,000 tons, which, Rice adds, "figures out to an estimated annual growth rate of around 30%, comparing favorably with the Paley expectations."

Some Good, Some Bad: Battelle Memorial Institute's technical director, John Sullivan, observes that, with respect to iron and steel, the Paley Report made no gross errors, statistically, although some prospects may be brighter than the report indicated. Sullivan also decries premature analysis of the report.

Perhaps the harshest criticism of the Paley Report came from consultant Raymond Ladoo, who characterized the commission's labors an "incomplete and spotty job" on industrial minerals as a whole.

Most critics, however, carefully emphasize the illogic of too-early appraisals of the report. They agree that CPI forecasters may use it—with caution. The commission purposely painted the 25-year industrial picture with a broad brush, they add, and using the report should not give rise to hope of obtaining the degree of accuracy usually sought by market researchers concerned with commodities of interest to their own firms.

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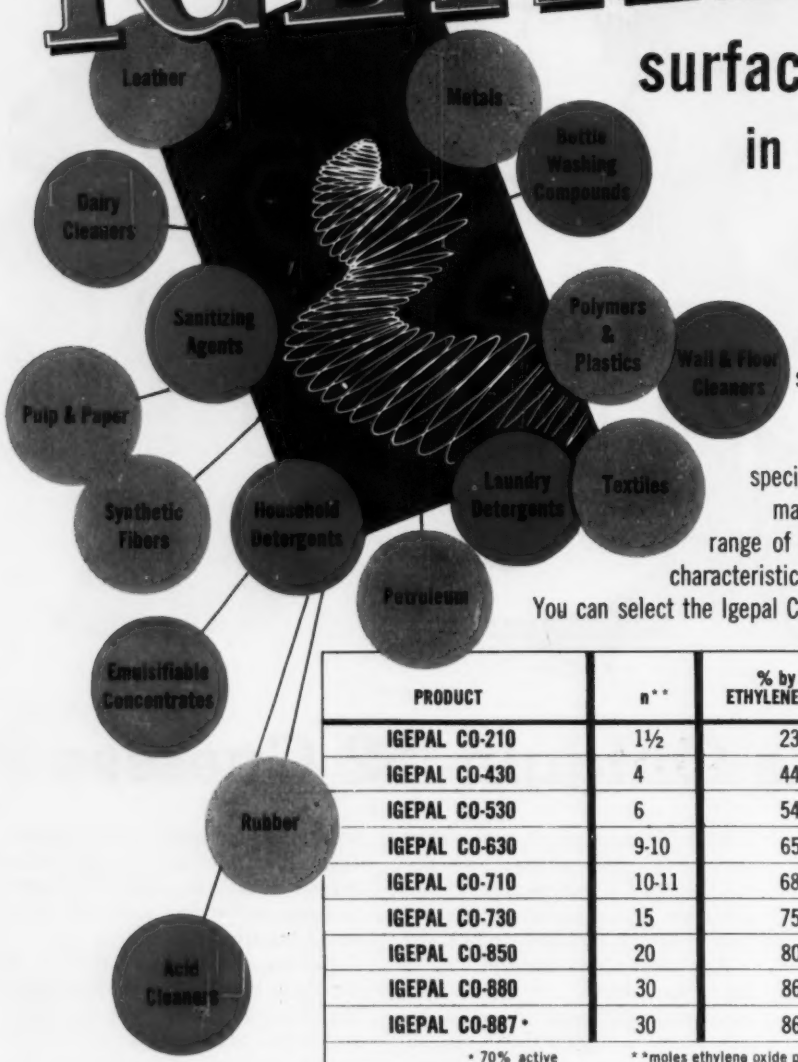

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IGEPAL CO-710	10-11	68	158-162° F
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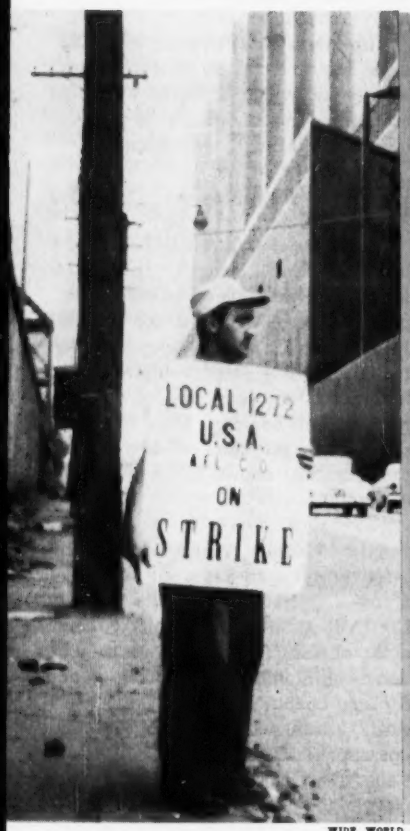
A 'Maybe' Steel Strike Brings Mixed Reactions from Equipment Makers



WIDE WORLD

"You have to be living in a dream world to believe there isn't going to be a steel strike."

"Our plans are geared so we won't be ordering any steel from July to September."

"Our competitors are taking jobs at 1-2% over cost; so we'll have to hold prices regardless of what happens to steel prices."

"This time we've no alternative but to follow steel prices. We can't afford to absorb another price hike as we did last year."

"We do not intend to raise prices in 1959 and will absorb any steel hike for competitive reasons."

"We've already boosted prices in anticipation of a steel price hike."

Steel Strike—Sign of Equipment Cost Hike?

This week, one large Midwestern manufacturer of processing equipment is embarking on a concerted steel-buying program, in apprehension of a possible July 1 steel strike. This move is a fairly typical one, as disclosed by a just-completed CW survey. And it serves as a tip-off that — although equipment makers are not agreed on what'll happen to prices— they'll keep up delivery.

As the survey also points up, most equipment firms are pretty much resigned to a steel strike. The differences lie in their estimates of the duration of such a shutdown. Outfits digging in for a long shutdown cite the extreme demands the union hints it will make. Those discounting the threat point to cogent arguments against a strike — largely economic — to explain their lack of concern.

Long and Short of It: Some of the equipment makers are basing their plans on the preparations of the steel companies. Steelmakers are girding for a four- to eight-week strike, although they say they have little real basis for this action, other than the opening public forays of the union. (No negotiations have started, and formal bargaining teams have yet to be announced.)

Newspaper ads placed by the steelworkers' union suggest that the union is looking for about a 38¢/hour package (nearly double its average boost in each of the past three years), a figure that the companies say they have no intention of meeting.

The arguments against a long strike, from the steelworkers' point of view:

- Many of the workers were out of work or on part-time a large part of last year.
- The steel union does not have a strike fund, as do the auto and coal workers' unions.
- Steelworkers' President David McDonald must still be wary of internal dissension. This point may make him want to force a strike to maintain his prestige in the face of the recent concessions won by Reuther and Lewis. More likely, it will cause him to abide by wishes of the rank and file, who appear to be against a costly strike.

Prices May Rise: Opinion is also divided on a strike's effect on prices of CPI-destined equipment. It's generally felt that a wage boost would mean higher steel prices. Some manufacturers say they would be willing to absorb the difference (in the light

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of a still-tight competitive situation), while others say they would have to hike prices if their material costs were to go up. Some also declare they have other troubles—regardless of a steel strike — that may force them to raise prices.

It's almost axiomatic that the steel companies would pass along added costs in the price of their products. But the prospect of a sizable hike in steel prices may be discouraged by the current Kefauver committee investigations.

The firms that forecast a respite from price hikes in *CW*'s survey last year (*CW, March 29, p. 43*) now say they held prices close to their predictions. One that did raise prices says now, "I can't see how our customers could stand for another price increase." Some that held firm last year also report that their policy this year again will be to try to hold the price line. Two companies hope to avoid increases by cutting down on the practice of discounting to obtain contracts.

However, '58 was a hard year for most equipment makers, and many say they wouldn't be able to absorb additional costs. Two of the companies surveyed have already raised their prices in anticipation of steel price increases. Others, waiting for the outcome of the situation, say that this year there is stronger likelihood of an increase than there was last year. Says one, "This time, we've no alternative. We can't afford to absorb another increase."

Chemical companies also look for some higher prices, but they appear to sympathize with the equipment makers' position. Says one, "With their profit picture the way it is, they can't help but raise prices." At least one chemical firm expecting an equipment price hike is trying to stave it off a while by building up a 90-day inventory.

Normal Availability: Because of the precautions being taken by both equipment makers and chemical companies, the availability of equipment should remain good, even if there is a strike. One processing company worries that sympathy strikers might hamper deliveries. But a typical sentiment is this reaction from a chemical company purchasing department director: "As for deliveries of equipment, we are not having any difficulties and believe even a long strike wouldn't give us any trouble." And equipment makers also say that they aren't worried about their delivery schedules.

The Over-all Picture: for CPI firms, most indications point to a short steel strike, if any, followed by moderate price increases for steel and, in turn, some hikes for equipment.

EQUIPMENT

Liquid Level Control: Jo-Bell Products, Inc. (Oak Lawn, Ill.) is marketing a new liquid-level control that monitors two levels. The new Model KT-Tandem Control is designed with two electrical signals, actuated at a high and a low level, in a single explosionproof housing. Thus the unit serves the purpose of two separate controls, allows initial purchase economy.

•

Safety Goggle: A new color-coded safety goggle with improved air circulation is offered by Glendale Optical Co. (Valley Stream, L.I., N.Y.). The color of the frame conforms to the American Standards Assn. color code for acid operations, makes the goggle easily identifiable as to the type of operation in which it is to be used. Called the Glensite "Softie" Chemical Goggle, the new device has six splashproof vents to provide air circulation and prevent fogging.

•

Gas-Liquid Chromatograph: Jarrel-Ash Co. (Newtonville, Mass.) is sole North American marketer of a newly developed gas-liquid chromatograph, manufactured in England by W. G. Pye & Co., Ltd. The Pye Argon chromatograph employs an ionization detector rather than thermal devices, can detect as little as 2×10^{-11} moles of most organic substances. The ionization detector system is said to maintain stability and reproducibility virtually independent of temperature, pressure and flow rate. Samples as small as 0.025 microliter can be analyzed, according to the company. And analysis time is said to be reduced by short, high-efficiency columns (over 1,000 theoretical plates per column foot).

•

TV-Camera Mount: A new television-camera mount by KIN TEL Division of Cohu Electronics, Inc.

(5725 Kearny Villa Rd., San Diego, Calif.), is designed to broaden the area that can be continuously monitored by a single closed-circuit TV system. Model ARC-11B mount continuously pans the camera from side to side, tilts it up and down at adjustable speeds and within set limits. From a control panel up to 3,000 ft. away, camera motion can be stopped instantaneously to focus attention on a given spot. The mount is designed for heavy-duty outdoor use, fits a standard 6-in. pipe flange.

•

Recorders and Indicators: Three new recorders and indicators are now available:

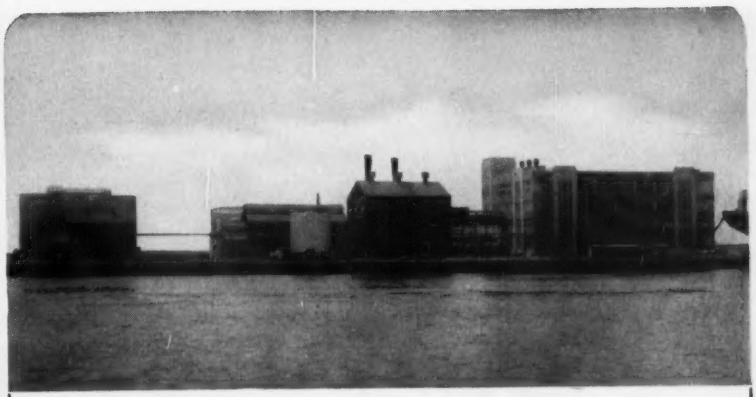
(1) General Electric Instrument Dept. (Schenectady 5, N.Y.) is now marketing the CH-37 Duplex recorder, a general-purpose unit for plotting two related electrical quantities side-by-side on a single chart. GE says the unit features compactness, takes one-third less space than two single-element recorders. Charts are 4 in. wide, printed on a single record roll. Chart speed can be varied from ¼ in./hour to 120 in./minute.

(2) A new adaptation of Leeds & Northrup's (4939 Stenton Ave., Philadelphia 44) Speedomax Type H recorder-indicators allows the measurement on Model R and S instruments of variables detected by three-terminal resistance-type transducers. The instrument utilizes a ratio form of Wheatstone bridge circuit, is designed to operate with transducers having a total resistance between 1,000 and 10,000 ohms. Round- and strip-chart models are available.

(3) A new multiswitch indicator offered by Wheelco Instrument Division of Barber-Colman Co. (Rockford, Ill.) allows rapid checking of temperatures at as many as 108 different points. Wheelco says its 9000 Series indicator has an accuracy of ±0.25% for all spans on its 11-in. scale. With the aid of transducers and proper circuitary, the indicator can also be used for other variables.

•

Emergency Generator: Consolidated Diesel Electric Corp. (880 Canal St., Stamford, Conn.) says it has developed an emergency generating set that restores full voltage within 1.5 milliseconds in the event of a power failure. It's available in 15-, 30-, 60- and 100-kw. sizes.



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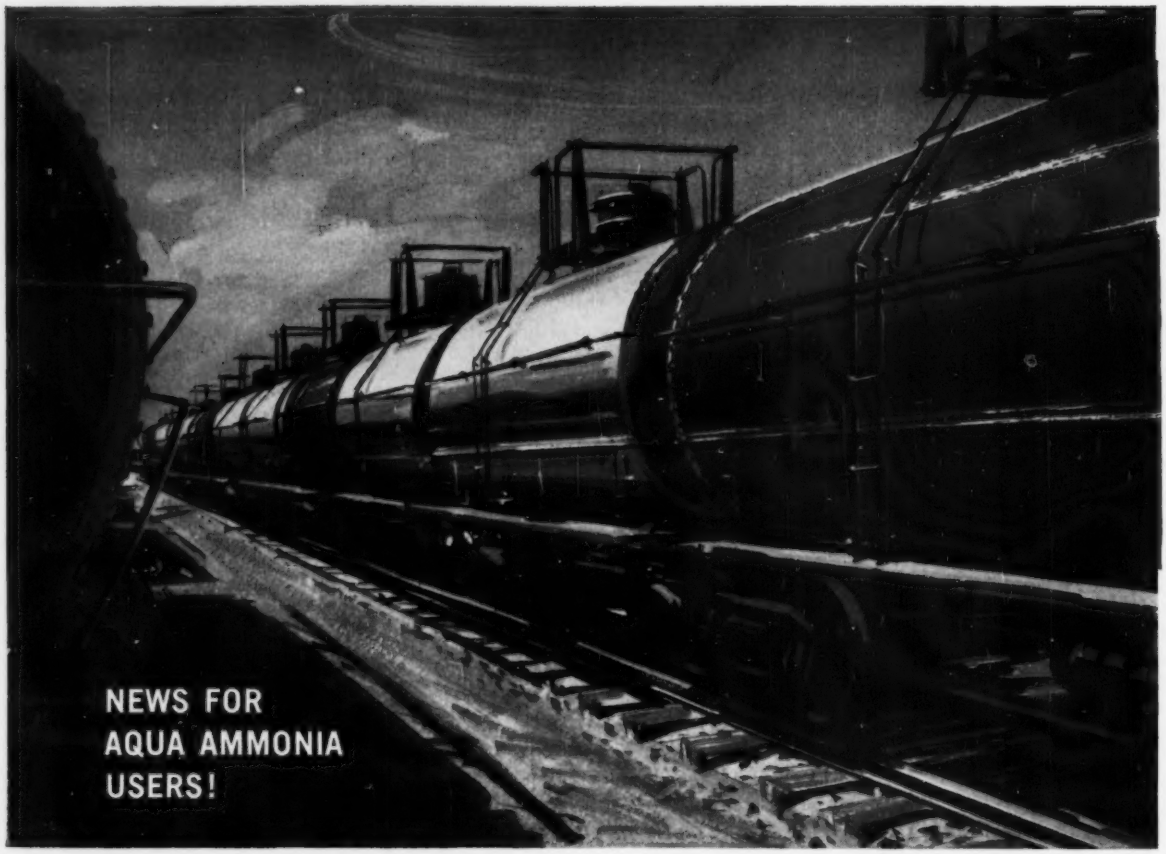

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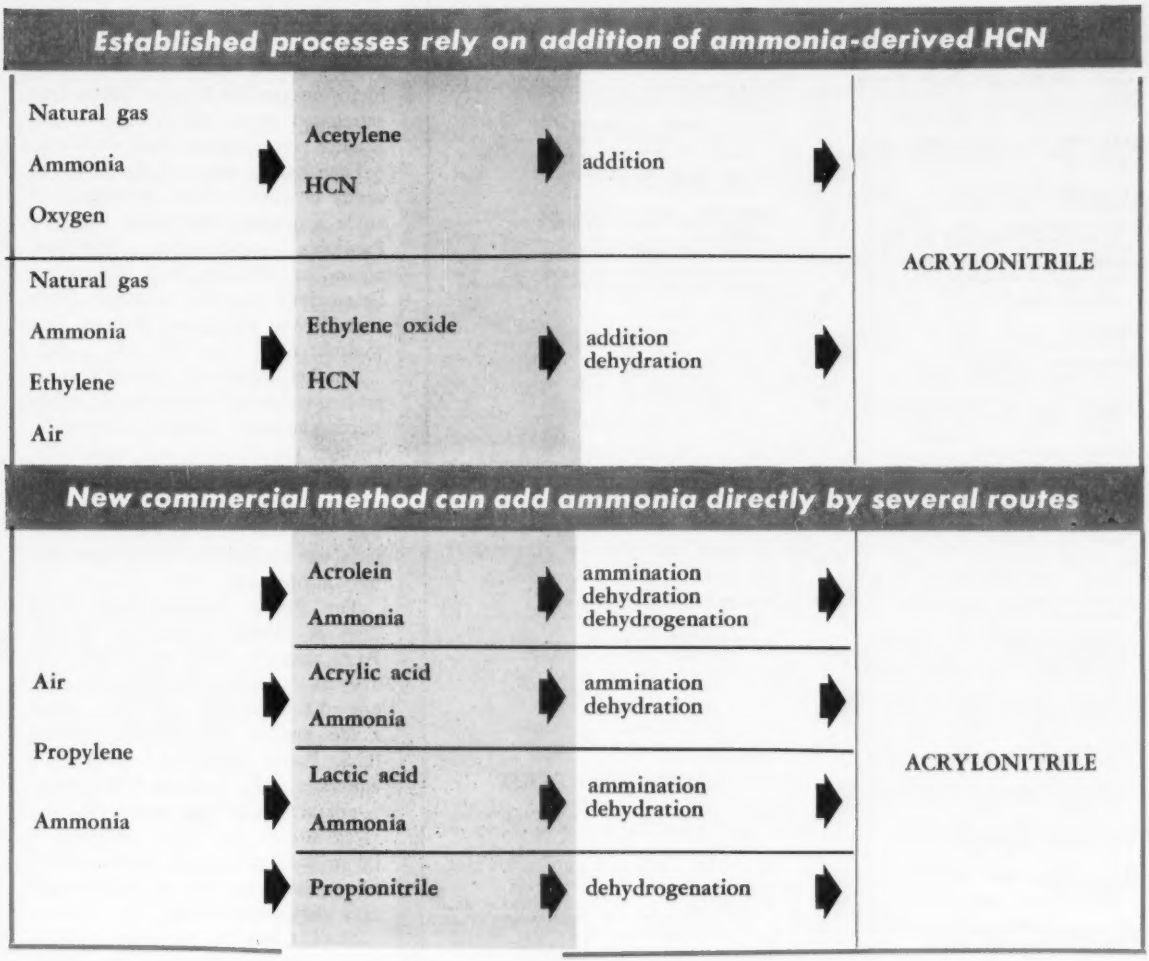

For Acrylo: A More Direct Route

This week finds the industry buzzing about Sohio Chemical Co.'s plans to commercialize a propylene-ammonia route to acrylonitrile (CW Technology Newsletter, Feb. 14). The plant will be in operation at Lima, O., by early '60. Sohio hasn't disclosed the capacity, but chances are it will be about 40 million lbs./year.

Speculation is rampant as to just what the route might be and where the product is going.

Several attempts have been made, over the years, to cut raw-material costs and operating steps in making acrylonitrile by starting with propylene and ammonia rather than the conventional reactants: ethylene oxide or acetylene and hydrogen cyanide (*table, above*). But, until now, such efforts have been more academic than practical. However, Sohio—which says its process was developed entirely at its Cleveland research laboratories—has given the method a pilot-plant tryout with the aid of prime contractor Badger Mfg. Co. (Cambridge, Mass.). Sohio has already purchased the equipment for the new plant.

Pending issuance of the worldwide patents for which it has applied, Sohio prefers to keep mum about process information. It says only that its process is a highly selective, catalytic, vapor-phase route that calls for fewer steps than do conventional routes; that it has carried on research in olefin oxidation since '51, ammination since '55; that troublesome by-products of other processes (e.g., methyl vinyl ketone) are not encountered; and that it yields acetonitrile as a commercial by-product. Chances are, though, that Sohio uses a two-step route via acrolein: a novel oxidation in the first step; and a new way to ammoniate acrolein, with simultaneous dehydrogenation and dehydration, to acrylonitrile in the second.

Ammonia the Key: The main con-

CHEMICAL WEEK • ADVERTISERS' INDEX

February 28, 1959

ANTARA CHEMICALS DIV., OF GENERAL ANILINE & FILM CORP. 64
Agency—The House of J. Hayden Twiss

BADGER MFG. CO. 4
Agency—F. P. Walther Jr. & Assoc.

BERKSHIRE CHEMICALS, INC. 67
Agency—Marsteller, Rickard, Gebhardt & Reed, Inc.

BLOCKSON CHEMICAL CO. 7
Agency—Wm. Balsam Adv.

CABOT, GODFREY L., INC. ..... 3rd cover
Agency—Larcom Randall Adv., Inc.

CHEMICAL CONSTRUCTION CORP. 6
Agency—Godwin Advertising Co.

CHEMICAL WEEK 47

CHEMTROL 28
Agency—Burton Adv. Agency

COMMERCIAL SOLVENTS CORP. 45
Agency—Fuller & Smith & Ross, Inc.

CONTINENTAL CAN CO. 31
Agency—Batten, Barton, Durstine & Osborn, Inc.

DIAMOND ALKALI CO. 46
Agency—Fuller & Smith & Ross, Inc.

DOW CHEMICAL CO., THE 16-17
Agency—MacManus John & Adams, Inc.

EASTMAN CHEMICAL PRODUCTS 61
Agency—Fred Wittner Advertising

ENJAY CO. 48
Agency—McCann Erickson, Inc.

FISHER CHEMICAL CO., INC. 44
Agency—Sam J. Gallay Adv.

GENERAL CHEMICAL DIV., ALLIED CHEMICAL CORP. ..... 4th cover
Agency—Kastor, Hilton, Chesley, Clifford & Atheron, Inc.

GOODYEAR TIRE & RUBBER CO. 1
Agency—Kudner Adv. Agency

GULF OIL CORP. 2
Agency—Ketchum, MacLeod & Grove, Inc.

HERCULES POWDER CO. 52
Agency—Fuller & Smith & Ross, Inc.

HOOKER CHEMICAL CORP. 15
Agency—The Rumrill Co.

JACKSONVILLE AREA CHAMBER OF COMMERCE 39
Agency—Newman, Lynde & Assoc., Inc.

JEFFERSON LAKE SULPHUR CO. 66
Agency—Bauerlein Adv., Inc.

KAISER ALUMINUM & CHEMICAL CORP. 26
Agency—Young & Rubicam, Inc.

KRAFT BAG CO. 29
Agency—Arthur A. Judson, Inc.

LOCKWOOD GREENE ENGINEERS 67
Agency—The House of J. Hayden Twiss

MINERALS & CHEMICALS CORP. OF AMERICA 8-9
Agency—Richardson, Thomas & Bushman, Inc.

MOREHOUSE-COWLES, INC. 54
Agency—Willard G. Gregory & Co.

NATIONAL ASSOCIATION OF GLASS CONTAINER DISTRIBUTORS 10
Agency—Walter J. Zacharski Assoc.

NORTON CO. 25
Agency—James Thomas Chirurg Co.

ROHM & HAAS CO. 51
Agency—Arndt, Preston, Chapin, Lamb & Keen, Inc.

SHELL CHEMICAL CORP. 12
Agency—J. Walter Thompson Co.

SINCLAIR PETROCHEMICALS, INC. 5
Agency—Geyer, Morey, Madden & Ballard, Inc.

SONNEBORN SONS, INC., L. 66
Agency—Leonard Stein Adv.

STAUFFER CHEMICAL CO. 42
Agency—John Mather Lupton Co.

TEXAS CO., THE 68
Agency—G. M. Basford Co.

UNION CARBIDE CHEMICALS CO., DIV. OF UNION CARBIDE CORP. 58
Agency—J. M. Mathes, Inc.

VICTOR CHEMICAL WORKS 32-41
Agency—The Buchen Co.

WESTVACO CHLOR-ALKALI DIV., FOOD MACHINERY AND CHEMICAL CORP. ..... 2nd cover
Agency—James J. McMahon Adv.

WAYANDOTTE CHEMICAL CORP. 55
Agency—Brooke, Smith, French & Dorrance, Inc.

tracers SECTION

(Classified Advertising)

F. J. Eberle, Business Mgr.

BUSINESS OPPORTUNITIES 71

CHEMICALS: Offered/Wanted 71

CONTRACT WORK WANTED 71

EMPLOYMENT 71

EQUIPMENT: Used/Surplus New For Sale 71

MANAGEMENT SERVICES 71

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tribution to the economy of the process is the direct use of ammonia, priced at about 4½¢/lb. Commercial processes now used in this country use ethylene oxide and acetylene, require hydrogen cyanide as the nitrogen-containing reactant. Whether the hydrogen cyanide is manufactured or purchased (price: about 16¢/lb.), it's a more costly reagent than ammonia.

Even among some of the more recently proposed routes, hydrogen cyanide is needed. This is true with the Escambia vapor-phase acetylene route, as well as with Knapsack-Griesheim's process starting from acetaldehyde and going through lactonitrile (*CW, Sept. 27, '58, p. 53*).

Another important contribution to process economy is made by the other starting material: a refinery gas stream. Purified propylene is not needed for the process; a typical refinery stream of mixed propylene and propane can be used. Consequently, a plentiful material can be upgraded without preliminary purification.

The Puzzle: Exactly how Sohio does it, though, remains a puzzle. Past attempts have practically exhausted the apparent routes; none has proved commercially feasible. Sinclair made one of the earliest attempts (U.S. Patent 2,381,709) at reacting ammonia and propylene, but obtained a mixture, consisting mainly of saturated nitriles. Adjusting conditions to favor propionitrile, however, could allow the formation of acrylonitrile after dehydrogenation.

Shell Chemical Co. has a well-known air oxidation step from propylene to acrolein (*CW, May 7, '55, p. 72*) and Distillers Co. Ltd. also has a propylene-to-acrolein oxidation (U.S. Patent 2,670,380). In addition, Distillers has a direct acrolein-to-acrylonitrile route that involves a vapor-phase reaction with ammonia in the presence of molybdic oxide (or a wide variety of other catalysts) at 350-500 C and atmospheric pressure (British Patent 709,337). A less-attractive way is to oxidize acrolein to acrylic acid, then amminate and dehydrate.

Two other propylene-ammonia routes that have been proposed involve oxidation by nitrogen oxides. In one, patented by Du Pont (U.S. 2,736,739), propylene is oxidized with nitric oxide to acrylic acid, which is amminated and dehydrated to acrylonitrile. And Escambia has a patent

(U.S. 2,847,453) for making lactic acid by oxidizing propylene with nitrogen tetroxide. Lactic acid also yields acrylonitrile on ammination and dehydration.

Fitting It Together: Although there are many holes in the puzzle (especially in the areas of operating conditions, catalysts and other engineering data), the best fit for the pieces available seems to be a two-step process as follows:

(1) Propylene is oxidized with air to give a mixture consisting mainly of acrolein and unreacted propylene. Propane (if a refinery mixture is used) is partly dehydrogenated to propylene; any other products, including unreacted propane, are gases and easily removed later in the process.

(2) The mixture is catalytically reacted with ammonia in the vapor phase to give acrylonitrile as the main product.

The appearance of acetonitrile can be explained by the reaction of ammonia directly with unreacted propylene remaining in the mixture. This reaction, as described in patents issued to Socony (U.S. 2,450,636-642; 2,450,675-678), takes place—with the splitting out of methane—under the same conditions described by the Distillers patent for making acrylo from acrolein. Thus, it seems reasonable that both reactions occur under Sohio's conditions.

What's the Market? The other question that's tantalizing the industry is: Where do they expect to sell the products? As for acrylo, Sohio's answer to this question is that the plant's output is still uncommitted. The company's attitude is that it has a high-purity product made by a low-cost process, and it feels it can compete, even in an oversupplied market.

The company also has high hopes for the acetonitrile it will be producing. It has conducted market studies, has reached the conclusion that a considerably lower price (below the present 43-45¢/lb.) would stimulate wider use as a solvent, reaction medium and raw material.

Perhaps Sohio's bold entry into acrylonitrile production is best explained by parent company Standard Oil of Ohio's familiarity with large-size risks of petroleum exploration. But, with a new economic process at the core of the gamble, maybe the risk is not as big as it appears.

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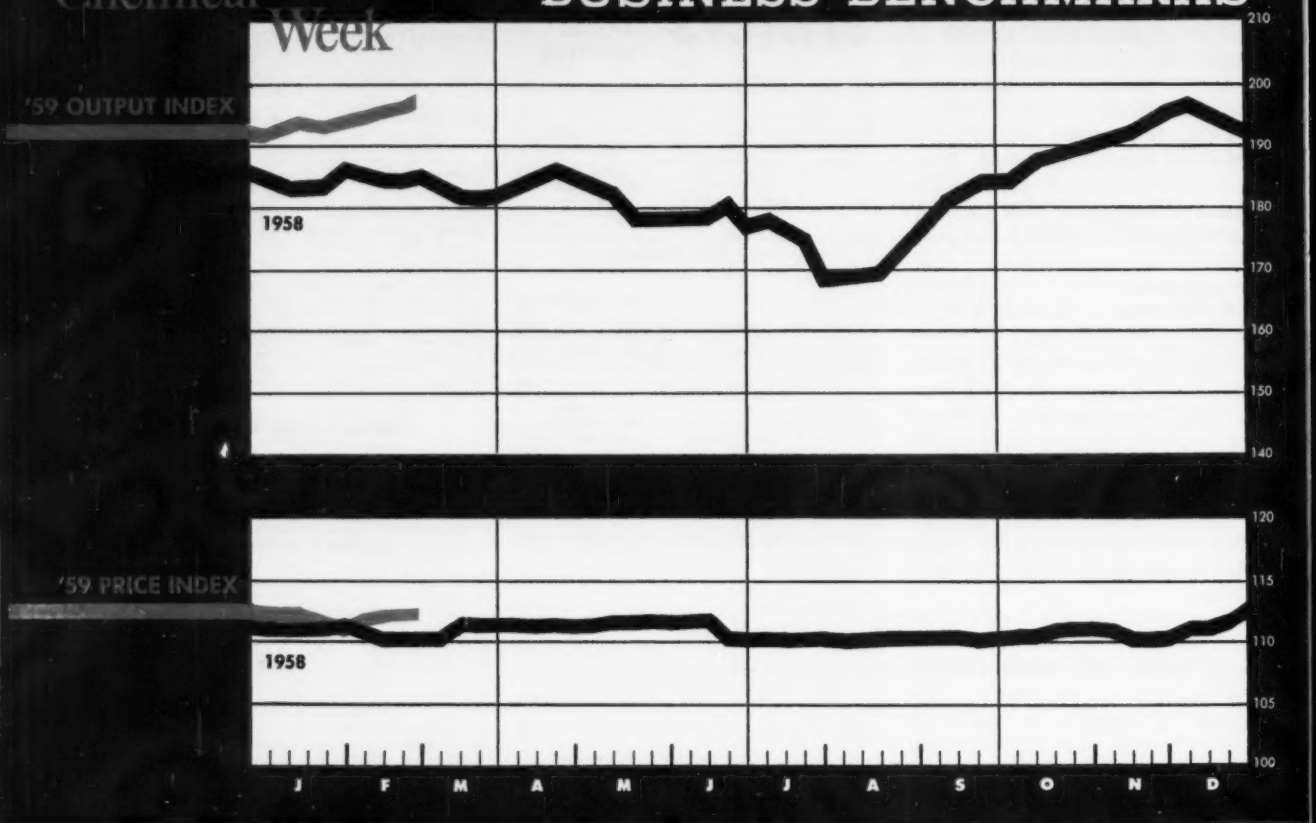


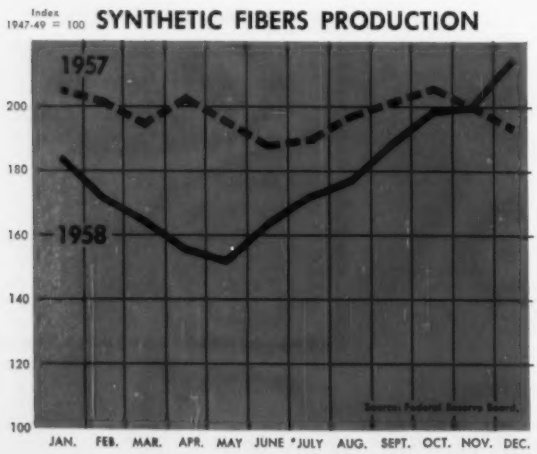
FEBRUARY 28, 1959

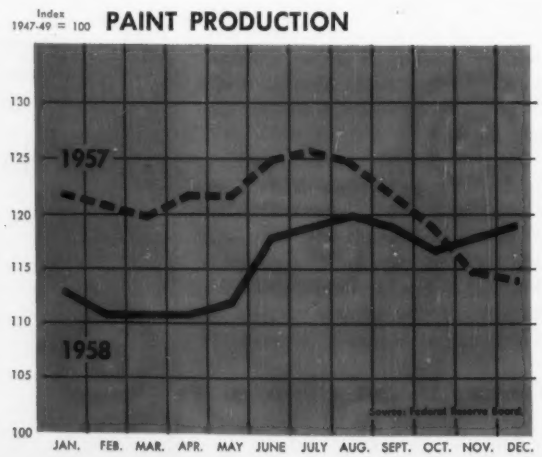
WEEKLY BUSINESS INDICATORS

	Latest Week	Preceding Week	Year Ago
Chemical Week output index (1947-1949=100)	199.0	197.5	182.5
Chemical Week wholesale price index (1947=100)	111.9	111.9	110.9
Stock price index (11 firms, Standard & Poor's)	49.68	48.71	39.53
Steel ingot output (thousand tons)	2,439	2,371	1,373
Electric power (million kilowatt-hours)	13,156	13,292	12,417

MONTHLY INDICATORS—Trade

	Manufacturers' Sales			Manufacturers' Inventories		
	Latest Month	Preceding Month	Year Ago	Latest Month	Preceding Month	Year Ago
All manufacturing	28,038	27,503	26,690	49,221	49,301	53,520
Chemicals and allied products	2,036	2,023	1,890	3,742	3,767	3,820
Petroleum and coal products	2,896	2,819	2,654	3,291	3,324	3,644
Textile products	1,093	1,102	999	2,465	2,456	2,679





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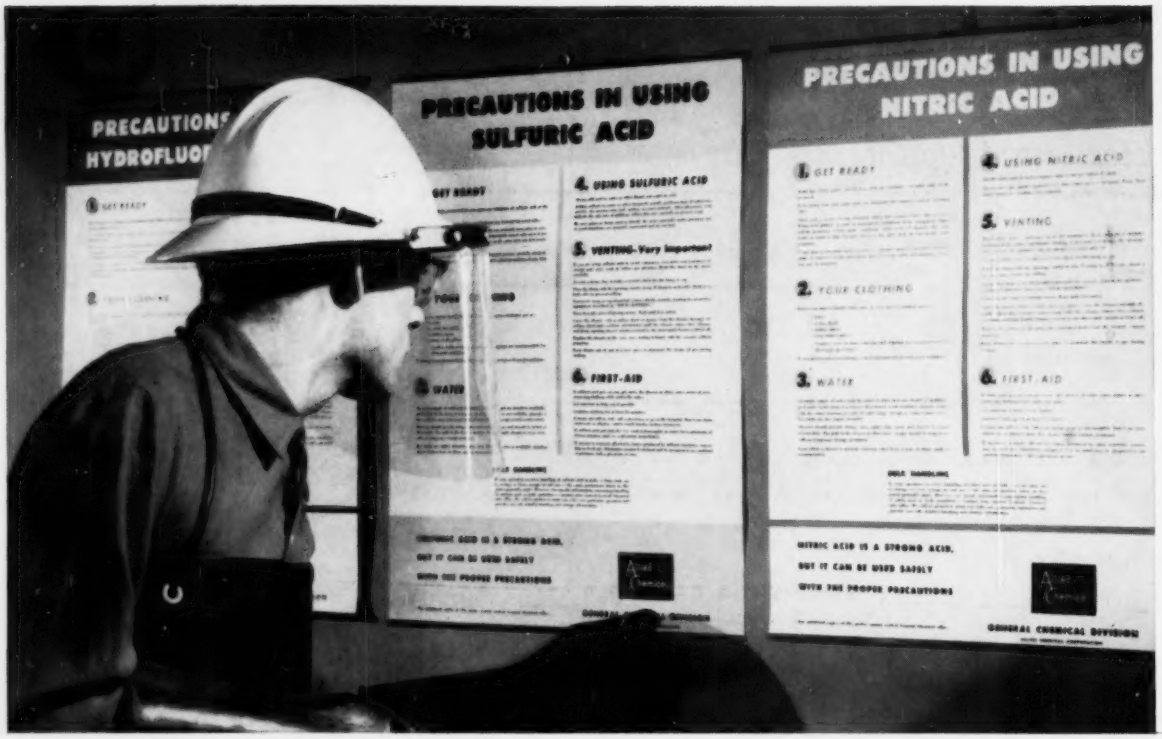

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